

# University News

MONDAY, JUNE 14, 1993

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Editor :  
SITIND R SINGH

# Education and Socio-Economic Development

K.P. Nath\*

Education is considered a vital instrument for national development. The future of a nation, it is said, takes shape in her classrooms. From the mere literacy of the masses to the highly professional skills, all forms of education contribute equally towards overall development of a nation. The progress of a country depends equally on its human resources as on its natural, mineral or agricultural resources. However a country be rich in her natural, mineral or agricultural resources, their fullest utilisation depends on the human resources developed through education. Thus there exists an interrelationship between education and national development. It is evident from the fact that a country educationally developed is also developed in all other respects. Education provides the infrastructure on which the edifice of development of a nation is built. Numerous studies conducted by social scientists have shown that a nation remains underdeveloped so long as its people remain deprived of education. Frederich Harbison conducted a similar study on 75 countries and found the coefficient of correlation between the rate of literacy and the Gross National Product (GNP) of these countries to be as high as .88.

All the developed countries of the West have highly developed systems of education and almost cent per cent literacy among the people. In the East, Japan is the only nation to have achieved a literacy rate as high as 98 per cent. Technologically and industrially Japan is far ahead of other nations of the East, although Japan has a number of limitations. It has low natural resources. Geographically also, it is a small country. Only about one-fourth of its land is suitable for cultivation. Besides, she has a dense population. Despite all these limitations the per capita income of Japan is well above other Asian countries. This is all because of her human resources developed through education.

Russia was a poor and shattered country as she emerged through the revolution of 1917. Percentage of literacy in her people was almost nil. But she took only 20 years to remove illiteracy from her people and put them on the path of progress. Her highly skilled workers and educated labour force made Russia one of the highly developed countries of the world.

The pace of progress of a nation becomes rapid when her people can apply the fruits of knowledge based on science and technology in all the diverse fields of national economy — agriculture, industry, irrigation, power, communication and the like. Even general literacy can help people fight ignorance, disease, malnutrition, ill-health, superstitions, blind beliefs and prejudices. Where there is ignorance, there is malnutrition, ill-health and disease. Consequently people cannot be hard working. The result is general poverty of the nation.

Education inculcates refinement of the mind and thus creates a yearning for better living standard. Therefore, educated people alone strive for better amenities of life and, thereby, raise the standard of living. Education enables an individual to work with vision and purpose. Therefore, only the educated can be productive. Uneducated are economic liabilities. The pace of socio-economic development of a people steeped in ignorance is bound to be very slow, which is unfortunately the case with India.

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India is a poor country, because her people are mostly illiterate and live with ignorance, dirt, filth, squalor and disease. Traditions, superstitions and prejudices add to their misfortune. It is a poor country not so much because she has no natural resources. On the contrary, she has vast natural resources with land, forests, sea-shores, rivers and waterfalls. Monsoon is a blessing to her agriculture. Yet her people live in stark poverty, because her human resource potential has not been developed through education. Even after fortyfive years of independence the percentage of literacy among her people is only 52.11. Developing a sense of national consciousness is not possible among people who are grossly illiterate.

At times our national planners have thought of curtailing expenses on higher education and spending most on primary education and adult education to eradicate illiteracy from our country. But both lower and higher education are equally important for the development of a country. Lower education develops national consciousness among people, enables them to realise the significance of various national programmes like family planning, afforestation, animal protection, etc. and generates in them a sense of involvement in all these programmes meant for the development of the nation. Higher education, on the other hand, provides human resources, skilled scientists, technicians and researchers to undertake works on various fields of national development. Of course, adequate planning is necessary at higher education level. Education should be diversified and work-oriented right from the higher-secondary stage so as to avoid unemployment and consequent wastage of human resources.

The Education Commission, 1964-66, in its chapter on 'Education and national objectives' describes :

"The success of our national reconstruction depends on the quality and quantity of persons coming out of our schools and colleges, the chief objective of which is to raise the standard of living of the general masses."

To achieve this end we have to raise the quality of our human resources through productivity-oriented education based on science and technology. Science must be taught to our children from the beginning on a compulsory basis so that they can develop a rational outlook, a spirit of enquiry and an attitude of experimentation, observation and drawing of inference thereon. Science is also the mother of technical subjects. To provide a basic knowledge of such subjects study of general science alongwith mathematics at school should be essential.

Work-experience provided in schools and colleges can instil in our children and adolescents an urge for work and infuse in them the sense of dignity of labour.

Theoretical studies in the classrooms should be combined with practical work in fields, farms and factories. This is the meaning of basic education also.

The development of a country depends to a great extent on the smooth functioning of its parliamentary institutions. We have to preserve and strengthen our democratic form of government. Democratic values based on cooperation, fellow-feeling, mutual good-will, tolerance, equality, fraternity, etc., should be instilled in our people through education. Of late there has been a fall in the moral, ethical and spiritual values among our youth. This has created a number of social problems. Drug addiction, delinquency and crimes among youth have alarmingly increased. This thwarts the progress of a nation. Therefore, education in social, moral and ethical values should be provided to our children and adolescents in schools and colleges.

A nation is rendered weak and all works of production in fields, farms and factories come to a standstill if there is internal tension and chaos in the country arising out of communalism, regionalism, linguism and the like. These antinational forces raise their heads from time to time threatening the unity of the nation. Education should, therefore, enable our youth to rise above petty sectarian thinking, should enable them to broaden their mind to think about India as a whole and compare it with other countries of the world. Our education system should be made an effective instrument for promoting social and national integration.

Today emphasis has been placed on education to bring about development in all spheres of national life. Factors like teaching of science and technology, inculcation of values like democratic, social, moral, ethical and spiritual values, increased importance given to productivity and social and national integration will no doubt accelerate the pace of progress of the country.

While education is of utmost necessity in the socio-economic development of a country, unless it is planned there is bound to be wastage of both human and national resources. A wisely planned educational system is necessary to yield optimum returns. Unplanned education having no relevance to socio-economic needs of a country may very likely produce ill-equipped youth who instead of serving the needs of the country may become a liability. For this purpose we need to carefully observe the following :

- (1) Utmost importance should be given to the spread of general literacy so as to create a sense of national consciousness among our people,
- (2) Education should be productivity oriented, and
- (3) Quality of education at all levels should be improved at all costs.

# Indian Education and Educators by 2000 A.D.

R.S. Trivedi\*

In the context of scientific and technological change we are now faced with new facts with new assumptions, new context, new concepts and new meanings. In a world characterized by rapid changes in knowledge, technology and management, teachers by and large find themselves out of touch with intellectual and other forces that shape the society.

Respect for the worth of knowledge in our context, and especially in the context of professional education preparing educators, is a matter which deserves immediate consideration.

The reason for inadequate preparation of teachers lies in the fact that a reliable method for relating the training programmes with their on-the-job performance has not been evolved. This requires basic foundation in professional knowledge and skills and practices developed on this foundation. The professional training of a doctor is the body of knowledge with which the graduate of this faculty begins his career and which constitutes his field. Similarly lawyers, engineers, architects, chemists begin their career with special knowledge and practice required of their careers. They practise their profession. The question naturally arises – what do we practise?

Teacher educators, of late, have become mere technocrats. They are taking refuge in the method instead of discovering the fundamental knowledge supporting educational theory and practice. This state of affairs in the context of drastic changes compels us to restructure the teaching force. Alvin Toffler remarks, 'It is not possible for education to cope up with the kinds and amounts of change that has taken place in a collapsed time-scale.'

We should frame a policy on teaching careers and mobilize resources to prepare youngsters for teaching careers. The vital point is what kind of teachers we want so that we can retool our schools in particular and educational system in general.

The present scenario of teachers and their organizations also requires to be refurbished. Unions based on mere numbers now would be out of gear. Teachers, it

seems, have lost their freedom, creativity and romanticism. The feudal approach on behalf of the organizations has to be abandoned.

The new order created by scientific and technological forces prepares us for new assumptions and new concepts. We are shifting from a non-technical to technical culture. In the coming decades, qualitative education will be the chief demand of the new society. Mere talk of 21st century is not enough. It may arrive at its own pace but with its arrival we must take every precaution against not being uprooted from our social keel. High quality education is the prerequisite to cope with the challenges of the 21st century.

Management consultant Peter Drucker and futurist, Alvin Toffler have both predicted that the currency of the future economy will be knowledge. Toffler believes that the challenges facing the modern enterprise are "knowledge gathering, truth requiring dilemmas". Therefore, ours will gradually become a society wherein generation, dissemination and organization of knowledge and even utilization of knowledge will be the primary occupation. Teachers of the new world are required not only to refashion their behaviour and role but retool the programme of instruction just as industries and business are retooling themselves.

Teachers have to carefully understand the new prominent characteristics of modern era. These characteristics are (i) scientific temper, (ii) objectivity, (iii) achievement motivation, (iv) merit and excellence, and (v) faith in change. The world of tomorrow cannot be restructured on yesterday's curriculum. The world of tomorrow would usher in an information rich and technological intensive society. This calls for new approaches to learning and a new learning delivery system. Capacity to learn will be more important than what is learnt.

This reminds me of the report of the National Commission on Excellence in Education 1983 (U.S.A.) — *A Nation at Risk*. The Commission said "If an unfriendly foreign power had attempted to impose on America the mediocre educational performance that exists today we might well have viewed it as an act of war. As it stands, we have allowed this to happen to ourselves." This agony is very appropriate with us. But our awareness to the gravity of the situation is lacking. The signal of a new social order is that, if we do not plan carefully and with specific goals, our development itself will collapse.

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The Carnegie Forum on Education and Economy, in its report in 1986 "A Nation Prepares—Teachers for 21st century" stressed the "urgency of making our schools once again engines of progress, productivity and prosperity". This is an eye opener for those who are preparing for new era to begin with 21st century. Education, therefore, becomes the chief agency. The emphasis on knowledge as the chief factor in production is a new concept which educators today have to bear in mind. This leads us to revamp our teacher training programmes.

If knowledge is the chief factor in production, then education and work will be almost synonymous. The traditionally created artificial segments like liberal and vocational education will disappear. We still cling to traditional mode of behaviour and almost as it were, refuse to enter the new world by the end of this century. We are still groping in the dark and have made education unworthy. Our world, in turn, has become uneducational. The product of our system is "the dangerous juvenility". We are indeed heading towards uneducation, prevention of education. We are confronted with scenario of 'live students and dead education'.

The onus of change is on the teacher community. We cannot remain silent spectators. We have to gird up our loins to evolve a new system, new structure and a new mode of behaviour which will help us to discover a system in tune with the changes to come. The new system envisages flexible curriculum and appropriate juxtaposition of subjects in social sciences and physical sciences as it is the boundaries of different disciplines where cross fertilisation of new ideas takes place. We can evolve new centres of human services based on social sciences, technology-learning centre based on new mathematics, industrial design, engineering skills including even cybernetics. This will create real learning resources.

With the help of new humanities let us have a new understanding of new concepts like equal opportunity, egalitarian social order, standards in education. Let's answer the question whether the present system is a democratic disaster or an egalitarian triumph. Let us understand the concept of literacy in the context of second phase of literacy when the entire world is transformed in the context of technological change and similar value change. Mere decoding of alphabets is not literacy. Making the people aware of the equality of opportunity, equality of conditions and equality of results is more important for them who are making endeavours to make their life worth living. Participation at grass-roots is meaningful when large majority is made aware of their participation. Similarly the new world demands that mass education be replaced by education for all. The art of learning technology is to be relearnt so that we can use it for the maximum individual gain.

In such a switch-over, teachers' role is entirely changed. It is the role of a facilitator, mentor or a co-mentor. With more technological progress we require a greater individual autonomy in the system; otherwise we will remain 'defective human beings'.

Increased knowledge concerning our physical and social world is crucial for developing new cultural norms to avoid the dangers of technological developments. The most notable value-change is a new perception of the role of knowledge. This perception envisages knowledge as producing a more comprehensive understanding of human objectives in terms of progress. This brings a qualitative change in life.

A century ago it could reasonably be said that an individual would die in the same culture into which he was born. But today we find that 'change' is an inherent part of a dynamic socio-economic system. Business and industry thrive on change especially in a period of technological breakthrough. It's time for us to draw a lesson from this and broaden our horizon. The aptitudes, attitudes and role of our organizations and even our educational programmes are put to test to adapt to the realities with which we'll be confronted in near future. Let us not forget that the quality of life in the coming decades will depend on the quality of education. The difference in quality of life is in the social self-realization-approach instead of the present competition based approach. The competitive education is class biased, ethnically biased and even sex biased.

"The responsibility of the present generation of adults is to ensure that the brains of future generation are not destroyed in classrooms". This is an indicator for us to see that our students equip themselves for new challenges. Challenges may not be looked upon as threat. And that the students have to develop a higher purpose beyond their 'self'. The quality of life means quality of life for everyone in the community. This is the value we have to imbibe in our students in the new scientific and technological social order.

The teacher community in the hour of crisis of change is called upon to undertake an important task of moral regeneration. This is a collective enterprise. A large section of the society today, is not with us. We have to put in a good deal of hard work in taking the society with us. This could be done by educating the social mind. Our objective should be to establish the nuclei for the new consensus for education.

The Eighth Five Year Plan concentrates on social transformation meaning thereby more innovative programmes to socialize, internalize and institutionalize new goals of development.

The new responsibility lies on us. Are we prepared to accept these challenges today? Let's devote ourselves to new commitments.

# Strategy for Excellence in Higher Education

Mamota Das\*

Education is the key to unlock the main gate to civilization and modernization. It is the most important means to develop individuals and the nation, and to bring about the desired social reforms in this fast changing world of ours. Education is not only used to bring about constructive and desirable social, economic and political changes and development, it is also the immediate answer to "Rising Expectations" of the people everywhere today.

Higher education occupies an important place in the process of nation building. Like the other Third World countries, India today is also engaged in building the nation right from the grassroots. Of a number of variables of development, education in general, and higher education in particular, should be deemed as one of the powerful factors of development.

The present system of higher education is a transplantation of British system. Higher education has vastly expanded since 1947. At that time there were 700 colleges and 20 universities. Substantial investments have been made by the centre and the various state governments in institutions for higher learning and now there are over 200 universities in the country and over 7000 colleges. The growth in higher education has largely been quantitative. The infrastructure for education has proved inadequate and the results have been disheartening leading to few major fallacies. What is worse is that there is considerable waste of both human and material resources.

Higher education seems to be caught between the traditional expectations and the new demands. Young students call for education that helps them relate formal curricula and courses to social needs, and search for solutions to societal problems. Middle aged persons in employment call for on-the-job arrangements in education that help them keep pace with technological progress and acquiring higher skills. Disadvantaged persons call for equal opportunities in education that will help them gain knowledge and skills and join the mainstream of society.

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In a developing country like ours, higher education should have pointed goals. This leads to a few queries — What ails higher education? What are the pitfalls of higher education? What strategies are to be adopted towards Excellence in higher education? Every university stands for the pursuit of excellence. Among the major functions of a university 'teaching' and 'research' are most important for which one needs to concentrate on the following aspects —

How to make the teachers in the universities more accountable for their duties, particularly towards their students?

How to make students more responsible for their studies?

In order to find solutions to the above raised queries there is a need for restructuring higher education and also devising ways and means to be adopted.

## Improving Infrastructure in Higher Education

In most of the universities there seems to be problems regarding inadequate teachers, qualified teachers, buildings, libraries, laboratories, etc. These problems can be minimized to some extent by

(a) putting a restriction on the establishment of new universities

(b) appointing qualified NET teachers to tone-up the academic life of the universities and attract professional talent and minimize inbreeding.

(c) keeping the staff and students actively engaged in research activities, scientific and technological know-how during their spare and leisure time instead of wandering aimlessly by providing departmental library and laboratory facilities with trained personnel.

## Curriculum and Syllabi

Keeping the Indian societal needs in mind the educational objectives have to be reset. At present our educational system is data-base-information-examination oriented and teachers treat the students as empty vessels of unknown knowledge. Knowledge is imparted without comprehension and applicability. Emphasis is only being laid on the cognitive aspect and there is a

cry for developing 'humanism' which is only possible by shifting the emphasis to the affective domain for inculcation of values, morals, social-emotional-national integration for which the curriculum and syllabi need a drastic change to meet the challenges of the nation at large.

Every university should introduce a scheme of innovative studies as core courses through which the students can be exposed to the principles of all major religions of the world and to their own cultural heritage thus developing in them an organized, well adjusted integrated personality.

#### **Core Courses**

- (a) Cultural Education
- (b) Comparative Study of Religions
- (c) Scientific Methodology, General Knowledge and Current Affairs.

#### **University Students**

Since higher education is the birth right of every Indian citizen it becomes the prime duty of teachers to build brains for which the following procedures may be adopted

- (a) Youth of today need to be guided and motivated as majority of them are victims of antisocial deeds. Every university should strengthen the co-curricular activities, NCC, NSS, population clubs and other extramural activities, utilise their valuable services for adult literacy by making it a part of their curriculum with appropriate weightage.
- (b) Various student forums be organised and study circles formed as tutorials for other competitive examinations under the supervision of specialised staff.

Effective functioning of student counselling centres by trained personnel, administration of various psychological tests to measure the intellectual and non-intellectual abilities of students for providing individual/group counselling and personal, educational, vocational guidance.

#### **University Teachers**

It is a usual tendency to show enthusiasm in the beginning of one's career but as time passes one seems to burn out leading to job dissatisfaction. Positive measures should be taken to reduce mental ill-health.

- (a) Improving the functioning of existing academic staff colleges by providing more practical knowledge to the participants in terms of modern teaching methodologies to be adopted.

(b) Making recent books and journals available to teachers.

(c) Providing infrastructural facilities for conducting research.

(d) At the university level teachers should be given due recognition for their outstanding performance in terms of monetary and non-monetary incentives such as increments, certificates of excellence, providing opportunities to exhibit their performance before other colleagues, as an exemplar.

#### **Academic Bodies**

(a) The Board of Studies and Academic Council at the university level should be constituted by external and internal members. Seniority of teachers should be maintained for their valuable contribution to the board and council. If any member fails to attend the meetings twice consecutively and if any member acts as a dummy the next senior member should be given a chance before the expiry of one's term.

(b) Every university should provide relevant documents of other universities related to Board of Studies and Academic Council for perusal and better functioning such as prospectus/calendar syllabi, etc.

#### **Performance Evaluation**

(a) Semester System having continuous internal evaluation through which students can be provided knowledge of their results from time to time as a feedback should be practised. In other words, formative evaluation should lead to summative evaluation.

(b) Every university should evolve its own discipline/area/subjectwise question bank which can be computerized and operated by other universities, if deemed necessary.

(c) Model question papers should strictly be taken into consideration by examiners.

(d) The question papers should not only contain questions of all levels of cognition but also different types — essay, objective, short answer covering uniformly the entire syllabus.

(e) In order to maintain uniformity the UGC grade system should be followed.

#### **State Level Coordination**

Education being on the concurrent list the centre and states play a vital role. State level coordination is a must for consolidation. Constant networking among the regional, district and local educational bodies for gaining excellence is a must.

# Quality Education and Development in Nagaland

Vidyapati\*

Education is instrumental in development on account of its role in providing the skilled manpower required to meet people's socio-economic needs. It is thus considered a supplier of 'human resources' which view, however, is not universally subscribed, for there are many who do not perceive human beings as agents of production whereby their social, cultural and civic roles are relegated to the background.

All the same there is massive expansion of education and the concern for improving its quality has been growing. This concern has been growing more because there is greater emphasis on value for money in the current times of public expenditure constraint. Nations and states look to their education and training systems to enhance their competitiveness in a world where education and training are coming to the fore as a precondition for economic development. Quantitative expansion of education has to go hand in hand with qualitative improvement. More so, as the societies get more and more technology permeated and competition driven. Consequently modern societies have been making increasing, diverse and extraordinary demands on education, thereby pointing to the imperative necessity of quality education.

## Quality Education

What does quality education connote? There is a tendency to equate quality with school achievement, particularly examination results. As a corollary, large scale failures at the examination make all concerned condemn the students and not take it as indicative of failure of the education system. It is also not adequately appreciated that the failure of education system breeds failure in our social and economic system. As such all attention is focussed on improving examination results. In fact, the latter tell us a little bit only about what has happened and hardly anything concerning how and why. In the anxiety to show better results the Nagaland Board of Secondary Examination decided to have separate examinations since 1988 for class IX and X instead of one final examination at the end of class X. No doubt, the burden of studies on the students having been reduced, they now have to study only half the course for the examination and thus enjoy better chances of success. Consequently the examination results of class X have shown some improvement. But this has led to complacency, perhaps delusion.

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No less a dignitary than Mr. Vamizo, chief minister of Nagaland warned against all complacency and urged the need of promoting science education as he addressed a distinguished gathering on the occasion of the concluding function of the Golden Jubilee celebration of Zehneboto town held on Feb. 9, 1992. He observed, "Among others we have also stressed the need for creation of facilities for science education and introduction of modern technology more vigorously in order to create employment opportunities. We must be grateful to God for bestowing us with rich minerals, forests, water and energy resources, and its exploration and utilisation will largely depend on the scientists and technologists.... We shall not remain in complacency of whatever has been achieved".

On the same occasion Dr. M.M. Thomas, Governor of the state in his address recalled the stream of events, ideas and steps culminating in the creation of Nagaland in 1963 as the 16th state within the Indian Union and stressed that the event ushered in a new era of peace for Naga people whereby they now had before them all the opportunity to formulate plans, put in efforts and make progress. He exhorted the citizens to make the state more responsible and responsive to the peoples' desires, ambitions and aspirations and to augment the creation of infrastructure for the development of the state. In an article published a few weeks later, he talked about the real renaissance of Naga culture, and that too in the form of a fullfledged peoples movement. He urged the need of the interpretation of the cultural history of Nagas and of promoting the concept of art as a medium for social transformation. In his view high quality research of contemporary relevance would go a long way in the traditional past becoming renewed as contemporary present. Alien cultures adopted by the Naga people would thereby acquire indigenous roots.

In order that all these difficult tasks could be tackled and laudable goals achieved, school education which forms the foundation has to be enriched. This underlines the necessity to redefine the criteria that establish quality education more broadly than mere school achievement.

According to Mawes and Stephens (1990) quality is basically a matter of three interrelated factors — efficiency, relevance and something more. While efficiency reflects better use of available resources and relevance refers to the needs and contexts, something more points to journey, a little further than mere efficiency and relevance. Quality of education should not only ensure

social and economic well-being but also enrich the quality of life. Education should be made relevant to the requirements of young people so that they are equipped to manage their personal lives and are able to function not only as workers but also as parents, citizens and in their other roles.

As such attention needs to be focussed primarily on three key concerns — curriculum, quality of teaching, and efficiency of pedagogy and work methods. The curriculum has to be redesigned so that it is more coherent, comprehensive and responsive to new social concerns in modern times of scientific and technological advancement. Issues of identity, environment, health, civic values and scientific outlook should be brought to bear on this redesigning. To improve the quality of teaching, the supply of good teachers and provision of their recurrent education need to be ensured. At the state level a pedagogical centre should be established which should be action based and concerned with the day to day experience of teachers and students. Besides undertaking research, this centre should be innovative in approaches to teaching.

Above all, the strong influence which examinations exert upon the curriculum and students approach to learning has got to be looked into. It may be noted that the orientations, conceptions and approaches of students to learning are strongly affected by the teaching and assessment they experience in schools and colleges.

#### The Case of Nagaland

In Nagaland these key concerns need to be given special attention. The teaching in science continues to be of a very poor standard, there being hardly any provision of laboratories and practical work in schools. Without demonstration and experiments teaching of science is dull and difficult, let alone promote the spirit of enquiry so very characteristic of science education. Even qualified and competent teachers of science are not available. There is no provision for postgraduate studies in many subjects, including science. The small number of subjects which have facilities of higher education do not include any course in cultural history of Nagas. At the secondary school stage its absence is no less marked. Innovation and employment of educational technology have yet to find a place in the curriculum. Besides, there are other areas which need updating and improvement.

However, it is gratifying to note that in addition to the existing Nagaland College of Education at Kohima, one District Institute of Education and Training has started functioning from the year 1992-93. These institutions can address to the issues and deficiencies indicated above besides taking care of other aspects of quality of education.

While presenting the budget for 1992-93, Chief Minister Mr. Yamizo mentioned that Nagaland belonged to a special category of states and as such urged for the

revival of the past system of meeting the gap in resources by central assistance. This underlines the severe financial constraint experienced by the state and indicates all the more, the poor plight of education among other things. True, there are no easy solutions. However, it would be worthwhile giving adequate attention to the concepts, ideas and programmes relating to quality education with a view to finding some solution and making the financial burden light. Quality education can be used as a useful tool in the economic management of teaching.

Our Prime Minister Shri P.V. Narasimha Rao, in his address at the 43rd meeting of National Development Council in December 1991 mentioned that the relationship between centre and states was that of partners. Stressing the need of peoples involvement he informed that it was being thought that some of the centrally sponsored schemes be transferred to the states in the VIIIth plan. He also indicated that there were plans to confer more responsibilities on the states and wanted the latter to participate in the planning process. Obviously the states have to be prepared for all this. In this connection attention will have to be given to manpower planning and necessary focus has to be put on quality education. Dwelling on the role of planning the prime minister recalled the emphasis that was laid at the time of the formulation of first five year plan. He quoted .

"Economic condition of a country at any given time is a product of a wider process aiming not merely at the development of resources in a narrow technical sense, but at the development of human faculties and the building up of an institutional framework adequate to the needs and aspirations of the people".

Quality education incorporating reforms and aiming at improving the management of existing resources has the potentiality to contribute to the development of human faculties and help in the building of institutional framework. With quality education illuminating the path of concerted action in the direction of augmenting resources and mobilising public participation in all spheres of development progress would gain impetus and acceleration. Already there is awareness, the will and capability to improve things in Nagaland. The success of Mother Association, an event among others bears testimony to this. The Association got a bill passed which declared drinking alcohol a cognizable offence in the state. This fund of public spirit preventing particularly the youth from going astray and motivating them to shape as responsible citizens has to be reinforced by quality education

Indeed one could look forward to the day dawning before the advent of the next century when Nagaland would take pride in extricating itself from the special category states and show the way to the other states of this category as to how quality education could be helpful in mobilising resources so as to get over the financial impasse and to bring about development making the quality of life of the people of state enriched and enviable.

# COPYRIGHT IN INDIA

Preeti Goel\*

Allen Kent has defined the copyright as "the exclusive, legally secured, right to publish and sell the substance and form of a literary, musical, or artistic work". Elsevier's dictionary of the printing and allied industries has defined it as the "exclusive right, secured by law, for authors and artists to publish and control their works during specified periods". Oxford English Dictionary defines copyright as the "exclusive right given by law, for a certain term of years, to an author, composer, etc. (or his assignee) to print, publish and sell copies of his original work". Copyright, hence, is the exclusive legal right of an author to reproduce, publish, adopt and to perform the work in public. The author, being the owner of the copyright of his work, has the right to authorise the making of copies of his work or to withhold his consent to such reproduction, which not only covers published works but also works in art, sculpture, films, choreography, etc. The purpose of copyright is to encourage the writers to produce and disseminate their creative works. Hence, copyright laws are necessary for the development of a nation's intellect.

## International Copyright

A need for protection against copying was felt after the invention of the printing press. With the advancement of communication media, printing technology and transport facilities, works of authors were commercially exploited at the national and the international levels. This necessitated the enforcement of legal acts for protection of the author's exclusive right to publish or assign it to someone else to publish it or use his work in any way he liked. The first legislation in this direction was made in the beginning of the eighteenth century in England, towards the end of the eighteenth century in France and in the nineteenth century in Germany. There is an increasing pressure for copyright protection since the second half of the nineteenth century at the national as well as international level. This has resulted in the adoption of multilateral conventions for reciprocal protection, namely the Berne Convention (1886) administered by the World Intellectual Property Organisation (WIPO) in Geneva and the Universal Copyright Convention (UCC) (1952) administered by the United Nations Educational, Scientific and Cultural Organisation (UNESCO) in Paris.

The Berne Convention was amended in 1896, 1908, 1914, 1928, 1948 and in 1971. Some of the salient features of this convention include : each member state has to accord the same copyright protection to the nationals of the other member states, as it accorded to its own nationals, a minimum term of copyright protection for the life-time of the author and 50 years thereafter which is obligatory to all member states, and copyright protection includes exclusive right of reproduction, translation, broadcasting, etc. The Universal Copyright Convention, on the other hand, provides the copyright protection for a term of life-time of the author and 25 years thereafter and it allowed freedom to the member states for issue of compulsory licences for translation.

Both these Conventions were later revised at Paris in 1971 and provided more facilities to the developing countries with regard to grant of compulsory licences for translation and reproduction of foreign works for teaching, scholarship and research. The idea was that such countries could have an easier access to the works of foreign origin in case such books were not available at reasonable prices in their national context which in fact hindered the educational, economic and industrial development of a country. This revision was the result of the sustained efforts put in by the developing countries, particularly India.

World Intellectual Property Organization (WIPO) is a specialised agency of the United Nations which is responsible for the promotion of the protection of intellectual property (including the industrial property as well as copyright) throughout the world by way of co-operation among states. It is playing a significant role for the improvement of copyright protection by way of advice on legislation and encouragement of countries to join the international system for copyright protection, through the extensive programme for setting up of author's organisations in developing countries; through training of personnel in this respect and through an extensive programme for creation of awareness about the copyright law and its benefits.

## Indian Scenario

Before 1914, India was governed by the Copyright Act of 1911, which was passed by the British Government. However, in 1914, a Copyright Act was enacted

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only for India and India was governed by this Act till 1958. Then Indian Copyright Act of 1957 was passed which was based on the revision of the Berne Convention and came into force on 21 January 1958. It consolidated and amended the existing laws so as to suit the Indian context. Necessary changes were made in this law including the copyright in films and broadcasts; voluntary registration of copyright in books and other works of art; setting up of a Copyright Office, and setting up of a Copyright Board to resolve disputes on related matters. This Act protects original literary, dramatic, musical and artistic works, cinematographic films and gramophone records. The general term of copyright protection according to this Act is for a lifetime of the author and a period of fifty years after his death. A Copyright Board has been set up under this Act which helps in resolving disputes regarding the copyright and the royalty matters. A Copyright Office has also been set up in the Department of Education of the Ministry of Human Resource Development of the Government of India since 1958 to register original literary, artistic and musical works.

The Indian Copyright Act of 1957 had incorporated all the basic provisions of The Berne Convention (including its revision up to 1948) and also the Universal Copyright Convention. When these two conventions were revised in 1971 at Paris to grant special concessions to developing countries with regard to translation and reproduction of foreign works, the Copyright Act of 1957 was also amended in 1983 so as to make full use of these concessions. This amendment basically aimed at protecting the rights of authors, making foreign books available at reasonable prices, removing any administrative drawbacks, etc. The Government of India, under this Act, can issue compulsory licences for translation and reproduction of works of foreign origin for educational (i.e., teaching and research) purposes.

The Copyright Act of 1957 was once again amended in 1984. The main feature of this amendment was to enhance the punishment for the infringement of the copyright. Any person found guilty of infringement of copyright in a work can be imprisoned for a period of six months to three years and with a fine ranging from fifty thousand rupees to two lakh rupees. The infringement of copyright has been declared an economic offence in this amendment.

The copyright law of India is one of the strongest in the world. The Government of India is working out its strategy to protect and enforce copyright for which a Copyright Enforcement Advisory Committee has been set up by the Ministry of Human Resource Development.

India not only has a strong copyright law, but is also actively engaged in a variety of activities to promote copyright protection at the international level. India is participating in all international seminars, workshops, training courses, conventions, etc. and is also associated with various committees for copyright protection. It was indirectly associated with the establishment of the Berne Convention and is a member of World Intellectual Property Organisation (WIPO) and the Universal Copyright Convention (UCC). It played a significant role when WIPO and UCC arrived at an important decision in 1971 to allow concessions to the developing countries in order to facilitate access to the protected works of foreign origin required for educational purposes.

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## TO OUR READERS

Knowledgeable and perceptive as they are, our contributors must not necessarily be allowed to have the last word. It is for you, the readers, to join issues with them. Our columns are as much open to you as to our contributors. Your communications should, however, be brief and to the point.

## The Literacy Cart

Prof. G. Ram Reddy, Chairman, University Grants Commission, delivered the Convocation Address at the fifteenth convocation of the Indian School of Mines, Dhanbad. He felt that "national problems like illiteracy should be the concern not only of the government but also of all social institutions such as universities, schools and voluntary organisations". He was sanguine that "once the youth of the nation gets involved, there is nothing we cannot achieve" and added, "we need the young shoulders to push the cart of literacy — it has not been moving fast". Excerpts

Literacy is essential for development. Literacy releases the individual from a sense of personal inferiority, from the relationship of dependency and sub-servience and allocates to the neo literate, new status and potential.<sup>1</sup> As the Declaration of Persepolis says : "*Literacy is not just the process of learning the skills of reading, writing and arithmetic, but a contribution to the interaction of man and his full development*"<sup>2</sup>. It appears illiteracy along with poverty is endemic in developing countries — they seem to go hand in hand. Throughout the world, map of poverty is also the map of illiteracy.<sup>3</sup>

The largest number of illiterates in the age group 15 and above are in Asia and more particularly in the sub-continent of India. Same is the case in Africa where the rate of illiteracy is very high. It appears 54 percent of adults in Africa are illiterate compared to 36.3 percent in Asia and 17.3 percent in Latin America. Sixty percent of all illiterates are women. Rokadiya points out that in some 14 third world countries the rate of illiteracy among women exceeds 90 percent.<sup>4</sup> As is expected in rural areas the illiteracy rate is very high.

Since independence India has been trying to eradicate illiteracy but the problem still remains a gigantic one. Gandhiji described illiteracy as 'India's shame and sin'. He viewed illiteracy as an important component of country's struggle to banish ignorance and poverty. The framers of the Indian Constitution in 1950 said that

all children attaining the age of 14 should be educated upto primary school level by 1960. In other words, this was to be achieved in 10 years. But, unfortunately, even after 40 years the dream has not been realised. When India became independent the literacy rate was shockingly low i.e. 16.67 percent (1951). According to the recent census, literacy rate of population of age group 7 years and above is 52.11 percent. Of this literacy rate of the males is 63.86 percent and females 39.42 percent. If one looks at the urban/rural literacy rates it is 44.18 percent on rural areas and 74.99 percent in the urban areas. In other words, in rural areas 55.82 percent of the people are illiterate and in the urban areas 25.01 percent of the people are illiterate. As is well known, literacy rate is the highest in Kerala — it is 81.56 percent. The States which have more than 50 percent literacy are Goa, Gujarat, Himachal Pradesh, Maharashtra, Mizoram, Nagaland, Tamil Nadu and Tripura. The literacy level in Andhra Pradesh, Arunachal Pradesh, Bihar, Jammu & Kashmir, Madhya Pradesh, Rajasthan and Uttar Pradesh is between 30 and 40 percent. The percentage of women's literacy is the lowest in Rajasthan (20.84 percent) followed by Bihar (23.10 percent) and Uttar Pradesh (26.02 percent). Thus, it is clear that after 45 years of independence illiteracy continues to be the major concern in national development.

According to the World Bank

estimates India would have the largest concentration of illiterate population in the world by 2000 A.D.; the country will have 54.8 percent of world's illiteracy population in the age group 15 to 19. As *The Challenge of Education* points out : "This indicates roughly the magnitude of illiteracy in the country and the urgency and importance that should be attached to removal of illiteracy in the context of taking the country to the threshold of 21st century".

Implications of such high level of illiteracy are very clear — it adversely affects the development programmes in the countries. "Neither democratisation nor modernisation is possible to be fully realised without literacy. If development is centred on people, literacy of all the people must go hand in hand with development" (p. 59)<sup>5</sup>.

Recognising the importance of literacy several developing countries have launched programmes to eradicate illiteracy. But the problem of illiteracy continues to cause concern in these countries. In this depressing scenario, however, there are a few success stories. Let me invite your attention to only two countries — Cuba and China. Cuba is often cited as an example of such success. Fidel Castro said in 1960 : "In the coming years our people intend to fight the great battle of illiteracy with the maximum goal of teaching every single inhabitant of the country to read and write in one year".<sup>6</sup> The battle against illiteracy in Cuba was waged by political system which threw its entire weight behind it. As a result they brought down the illiteracy rate from 23.6 percent to 3.9 percent in one year. Government closed all the schools for a year and sent the boys and girls of the age of 13 and above and their teachers to teach the peasants. True, Cuba is a small country and the number to be covered was relatively small.<sup>7</sup> However, there was the determination of the leadership to achieve the goal. The slogan used to be :

*"If you can teach, teach. If you cannot teach, learn".*

China is another case of success. In literacy drive during 1949-1982, 143 million people became literate. In the same period 47.73 percent spare time primary school leavers and several million spare time secondary school leavers and large number of grassroot teachers and technicians were trained.<sup>9</sup>

It is estimated that about 700 countries became free from illiteracy. China, like India, is a large and a old country but it has made millions of people literate in about 3 decades.

There is no doubt that series of measures have been taken by Central and State Governments to spread education in India. For instance, non-formal education has been assigned an important role and through it efforts have been made to reach large number of people. Adult Education has been included as part of the minimum needs programme in the 8th Plan.

The National Policy on Education — 1986 attaches special importance to the problem of illiteracy. It says that the whole nation has pledged itself through the National Literacy Mission (NLM), to the eradication of illiteracy, particularly in the age group of 15-35 through various means, with particular emphasis on total literacy campaign. The NLM has been assigned the task of achieving the targets. The NLM has been vigorously pursuing the nationwide movement for eradication of illiteracy in the country. Universities have also been playing their role in the removal of illiteracy.

But the situation is far from satisfactory. We don't seem to be firm in our resolve. In our country there is no dearth of information or philosophical or theoretical observations and policy prescriptives with regard to literacy. As Indira Kothara says our concerns have progressed from very simple literacy and numeracy through fundamental education, social education, non-formal edu-

tion, functional literacy and now basic education for all. We know about the problems of appropriate pedagogy, relevant premises, network developments, integrating literacy drive with other developmental factors, focussing women, concentrating on right age groups, enlist media support, motivating the learners, enthusing trainers and securing resources. We have known this fairly well, atleast since late 70s'. Yet what have we achieved in the decade since then? The estimate is that we have raised the literacy rate only by about 8 percent during the 1970-79 decade.

It is not as though we are not aware of the problem or do not know how to solve it? There is a resolve of the government but still when it comes to implementation our record is not very bright. It is true that India is not like China or Cuba which have authoritarian political leadership. Ours is a federal country with Parliamentary democracy. There are several languages and religions. What is more, they do not have that type of political discipline which is to be found in China and Cuba.

As is well known, India is a soft state. This, however, should not come in the way of attaining some basic goals.

Ultimately, as Paulo Friere has described, Adult Education Programme is a political act. He says that if some people say spreading literacy is a technical and pedagogic problem and has nothing to do with politics, it is not at all correct. No system of adult education can succeed without the backing of political will. In fact all education has a political interest inherent in it.<sup>10</sup> If we look at the pronouncements of political parties one would think that there is enough political will in the country. However, despite this political will about 47 per cent of the people are still illiterate. It is mainly a problem not only of strategy but also of implementation. Not only in the area of adult education but

in several other areas our record of performance and of implementation has been unedifying. It goes without saying that rhetoric alone will not deliver the goods.

One of our problems has been to leave everything to the government. True, government has to formulate policy, provide leadership and resources. A democratic government by its very nature will not be as strong as an authoritarian government. But national problems like illiteracy should be the concern not only of the government but also of all social institutions such as universities, schools, and voluntary organisations. In addition, professional bodies of teachers, lawyers, doctors, engineers should get involved in problems of this type. Equally important, if not more, is the role of the educated youth, in particular students, in rooting out illiteracy. The society has given you the best of education and you owe it to the society to take active part in solving some of the national problems like illiteracy, rising population, and environmental degradation. Once the youth of the nation gets involved, there is nothing we cannot achieve. We need the young shoulders to push the cart of literacy — it has not been moving fast.

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- 5 Govt of India, Ministry of Education, *Challenge of Education-1985*, p 24
- 6 *Ibid.*
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## **Excerpts from the Report by Prof. A.K. Ghose, Director, Indian School of Mines, Dhanbad**

We have devised a purposeful strategy of liaising actively with all potential employers in private and public sector in India to see that our graduates can contribute their mite to the national development process with meaningful employment opportunities. We are interacting closely with the AICTE so that in the highly specialised fields in which Indian School of Mines is involved, there is close monitoring for manpower planning.

The new funding pattern which was imposed in the University education system last year called for major efforts at belt-tightening and we have had to identify new priorities and chart new directions through expedient measures like marginal increase in the fee structure and savings on all fronts. The School has been able to tide over the economic crunch but we shall need new measures to address emerging problems.

Throughout the past year, the academic community engaged in a major exercise of SWOT to develop a strategic plan of action for the future of the School. New plans for restructuring of the School's management hierarchy are on the anvil to meet the challenges of change. The School's academic profile, which was founded primarily on undergraduate programmes, has now changed with a major emphasis on postgraduate programmes. During the year, the AICTE accorded approval for a new M.Tech programme in Rock Excavation Engineering, possibly the first of its kind in the country, and the School is exploring the possibility of launching a programme in management studies too.

During the year, the School embarked upon some major building programmes such as the construction of the Petroleum Engineering Building and the Centre of Rock Excavation building while the new Centre for Continuing Education was completed. The School also engaged during the year on a major exercise exploring how best to provide incentives to teachers and upgrade the quality of the education process. ISM, as a key national resource centre for education in earth sciences and mineral resources engineering, must continue to remain the undisputed leader in the area.

The level of activities of the School's continuing education programmes was high and 12 specialised programmes were offered. With the vastly enlarged facilities at the new Continuing Education Centre, the

School is gearing up for a massive expansion of continuing education activities and is liaising with CIL, ONGC and others for new programmes.

Despite resource crunch, library facilities at the School were strengthened and efforts were under way to access all library stock into a computer base, to be connected by LAN, for direct access by students. In terms of physical facilities, the School acquired some sophisticated equipment and instruments such as In-situ rock stress measurement device, XRD-Texture Goniometer and new Workstations in the Departments of Petroleum Engineering and Applied Geophysics. The School has launched a major programme of computer literacy for all the supporting staff and two programmes were successfully completed. The School is now planning for extensive computerisation of all its administrative functions and hopefully by the end of this year this will be completed.

During 1992-93, the School graduated 101 B.Tech, 14 M.Sc. Tech, 79 M.Tech and 26 Ph.Ds.

### **ANNAMALAI UNIVERSITY**

#### **NOTIFICATION**

#### **M.B.A. PROGRAMME - 1993-94 (Full-Time)**

Applications are invited for admission to M.B.A. (Semester) Programme (Full-Time) for the year 1993-94. Application forms and prospectus can be had from the REGISTRAR, ANNAMALAI UNIVERSITY, ANNAMALAINAGAR-608 002 on payment of Rs. 150/- in person or by sending a Demand Draft for Rs. 160/- which includes Rs. 10/- for postal charges in favour of the REGISTRAR, ANNAMALAI UNIVERSITY payable on Indian Bank or Bank of Madura Ltd., at ANNAMALAINAGAR or State Bank of India at CHIDAMBARAM. At the bottom of the backside of the Demand Draft, name and address of the candidate and course asked for should be clearly indicated. The application form together with the prospectus will be issued from 7-6-93.

**Eligibility :** A Graduate of a recognised university having secured 55% in the B.A., B.Com., B.B.A., or 60% in the B.Sc., B.H., B.Sc (Ag.), B.Pharm. or an equivalent degree or a pass in any postgraduate degree of a recognised university with 55% of marks.

Last date for the receipt of filled in applications by the University is 28-6-93.

The University will not be responsible for any postal delay.

K2/9/93  
Annamalainagar  
Dated : 29.5.93

**Dr. P.R. Karpagamapathy  
REGISTRAR**

## VCs Meet on Revised POA

Autonomy is to be given to more colleges and departments after appropriate changes are made in the University Grants Commission Acts and Statutes, according to the Programme of Action (POA) prepared by the Ministry of Human Resource Development. Stating this at the special meeting of Vice-Chancellors convened recently in New Delhi to discuss the revised POA, the UGC Chairman, Professor G. Ram Reddy, said during the past 7 years, out of 7,500 colleges, autonomy had been given only to 115 colleges. "I am aware that there are a few problems connected with autonomy. The revised POA suggests a new approach to granting of autonomy to new colleges," he said.

Similarly, Professor Reddy said, re-designing of courses was an important recommendation. It has been suggested that undergraduate courses should be restructured.

Further, Professor Reddy said the establishment of community colleges on experimental basis and part-time vocational courses were significant recommendations. "The POA raised apprehensions about quality and applicability of research done in some university departments. It talks of inadequate library facilities and meagre funding for research. One of its important recommendations is that there should be better linkages of the university system with industry, national laboratories and other research agencies," he said.

Professor Reddy said he was happy that the POA had taken note of meagre funds for research and asked for greater allocation of funds for research in the university system.

Professor Reddy also invited the attention of the Vice-Chancellors to

the three aspects — improving efficiency, mobility and academic calendar. Efficiency of the higher education system has been causing lot of concern in the country, he said, and cited the instance of the minimum number of actual teaching days or conduct of examination on time. "There are instances where examinations are behind schedule by one or two years. Improving efficiency calls for measures in other directions," he said.

"While we have been talking about national integration, there is virtually no mobility of teachers and students from one region to the other or from one state to the other," Professor Reddy said, adding that the POA rightly calls for measures to promote mobility of staff and students. "It suggests the enhancement of seats by 10 percent in postgraduate on supernumerary basis for students from outside the State and children of employees with all India transfer liability," he said.

Professor Reddy said the purpose of the meeting was not to discuss any philosophical or high sounding principles. That exercise, he said, was done before the preparation of the National Policy on Education and the recommendations made by it reflect the thinking in these seminars and symposiums. "I would suggest that instead of re-opening the merits and demerits of these recommendations we should concentrate on their implementation. Today we will have an opportunity to take stock of the situation and evolve our strategies to achieve the objectives," he said.

Prof S.K. Khanna, Vice-Chairman, UGC, said the education policy aimed at improving the quality of

manpower, infrastructural facilities and educational programmes. A major development in the field of higher education had been the revision of pay-scales of both college and university teachers.

The National Eligibility Test (NET) for recruiting college and university teachers had been introduced. Moreover, inter-university centres for providing common facilities for research in nuclear science, astronomy, astro-physics and other fields had also been undertaken, said Prof Khanna.

Dr. D. Swaminadhan, Member of Planning Commission, suggested the constitution of a national council for higher education which would bring in its fold both, technical and conventional universities for greater efficiency and cost effectiveness.

Dr Swaminadhan said that the council would help in inter-disciplinary approach to higher education. It would also function as a body to monitor standards of various colleges and universities in the country, ensuring excellence.

He also said it was essential that Accreditation and Assessment Councils which will assess institutions should be established as soon as possible. Dr. Swaminadhan also stressed the need to improve the quality of unrecognised centres of higher education. He noted that there were nearly 3000 colleges and 15 universities that were not under the purview of the UGC Act.

Since these institutions cannot be closed he said the question to ask was if they could be provided resources. "We have to allow them to participate in quality programmes," said Dr. Swaminadhan. He also emphasised the need for value orienta-

tion of education in which teachers have an important role to play.

Dr. B.A. Parikh, Vice-Chancellor, South Gujarat University, laid stress on sincerity of teaching and assessment of students. Even though he did not like to blame the students for the degeneration of higher education in the country, he said with the spread of university education all students who were now coming to the university were not academic minded. Some wanted to procure degrees by hook or by crook, he said.

Dr. S.R. Gowarikar, Director, Thapar Institute of Engineering and Technology, Patiala, said autonomy for the colleges would not have any meaning unless it was accompanied by financial autonomy. For this it was essential to make available enough funds to the colleges at the beginning of the academic year so that they could plan out for the year. He said complete autonomy that would include financial autonomy was an ideal situation in educational institutions.

Professor (Miss) Phenomena Royappa Reddy, Vice-Chancellor, Sri Padmavati Mahila Vishwavidyalayam, Tirupati, heading a 10-year-old university, said the freezing of grants by the UGC meant that universities would now have to look to other institutions for funds.

All for autonomy to the educational institutions at the university level, she said it increased the creativity of the courses, encouraged inter-disciplinary linkages and resulted in greater interaction between the students and the teachers. All this helped the education process, Ms Reddy said.

Dr. K.C. Malhotra, Vice-Chancellor, Himachal University, said even though the UGC did not finance university education all alone the withdrawal or curtailment of its funds had adversely affected the creation of infrastructure like equipment, books, etc. for research work.

Not happy with the research scholars in the country, he said, "most of them join research to gain time to prepare for competitive exams and they take their allowance as research scholars as an unemployment allowance."

Several academicians laid stress on compulsory training for university teachers taking the graduate and postgraduate classes.

### Orientation Programme for Teachers

A four-week Orientation Programme of Academic Staff College, Jodhpur, was inaugurated by Prof. R.N. Singh, former Vice-Chancellor of Sukhadia University, Udaipur. In his address Prof. Singh deplored the present state of affairs in higher education and said that to most teachers teaching had now become merely a profession instead of being a mission. But teaching being a mission required dedication, discipline, deep sense of commitment, hard work and organisational loyalty. Talking about the methodology of teaching, he asked the trainee-participants to make their teaching methods so simple that learning reached the last student of the class.

The programme was modular in approach. Its six components were — Environment of Indian Education; the Indian Education System; Educational Psychology and Pedagogy of teaching; skills for subject competency; group behaviour, personality development; and management of education.

As many as 14 teaching methodologies were deployed in the programme. They were — Micro-lab, Lecture-method, Panel discussion, group discussion, brain-storming, micro-teaching, interactive video method, in-basket exercise, simulation exercise, field study, workshop, behavioural games, book review and case study method.

In the panel discussion session held under the Chairmanship of Justice R.S. Verma, Judge, Rajasthan High Court, the whole house discussed the issue of "generating learning climate in universities and colleges". Justice Verma opined that due to population explosion universities and colleges were facing an acute admission problem and the ratio of students and teachers had considerably widened. Lack of goal orientation had made our students insecure and uncertain of their future. On the top of it, he added, the stereotyped or traditional education in non-vocational colleges was stifling their instinct of curiosity and inquisitiveness. The solution, Justice Verma said, lied in goal identification and creating in universities and colleges an atmosphere which might be conducive to the growth of free inquiry and scientific investigation. Referring to the role of teachers, Mr. Verma emphatically declared that none other than the teacher himself could provide the requisite leadership to this rudderless ship of higher education.

After detailed discussion the panalists arrived at the following conclusions : (a) Provide a goal oriented education; (b) compulsory aptitude tests for students and teachers; (c) evaluation of teachers by students, peers and superiors; (d) administrative steps for stopping commercialization of education; (e) modification of course-contents in the light of social needs; (f) creation of national cadre of teachers; (g) revamping the examination system; (h) rationalization of admissions in higher education; (i) political will for not interfering in universities and colleges; and (j) teachers be oriented to work with the missionary zeal.

Prof. M.L. Mathur, former Vice-Chancellor, University of Jodhpur, in his valedictory address, discussed the problem of resource generation in higher education in the light of

recent resource crunch, the pinch of which was being felt everywhere. He said that there are three beneficiaries of the higher education, viz. the state, the person himself, and the employing agency. All these three beneficiaries must be asked to pay, because these three took the maximum advantage of higher education. Today, the burden of education was in fact being borne by the poor people in the form of indirect taxes in the name of state, whereas maximum advantages of higher education were being availed of by the higher classes. To change this situation all the rich people must be asked to pay for higher education in proportion of their income. He also suggested a tax on educated people in the form of a graduate tax or postgraduate tax. Higher the education one gets, higher the tax he must pay. Another alternative might be providing long term loans recoverable from students once they settled in life, he suggested.

### Indian Economic Conference

The Platinum Jubilee (75th) Session of Indian Economic Association was recently held under the auspices of School of Economics, Devi Ahilya Vishwavidyalaya, Indore.

Inaugurating the three day conference, Dr. K.R. Narayanan, Vice President of India, said, "the policy of liberalisation is irreversible. We initiated it because of the requirements of our economy and hence it will be impossible to back out or reverse the fundamental process".

Our claim to live in a new era of economic thought and economic policy was not new, he said and added that what was really required was to carry out these policies and to have requisite infrastructure, mobilisation and singleminded concentration for implementing the ideas to achieve social justice and equality in the developing nations.

The Madhya Pradesh Governor, Kunwar Mahmood Ali Khan, who presided, stressed the importance of economic policies which could end the exploitation of power groups. He said that M.P. was the biggest state in the country in terms of area and 38 percent of population was living below the poverty line. The State should adopt economic policies which would give opportunity to people living below the poverty line to come up.

Prof. A.M. Khuro, President, Indian Economic Association, in his address said that continued and sustainable prosperity of the rich nations depended on the growth of poor nations. An allround give and take and free flow of trade all the world over needed not only a fair degree of competition and an elimination of monopolistic and oligopolistic economic entities, but also for some period, a conscious provision of subsidies, lower taxes, technical assistance, human resource development and measures to lift up huge numbers of low income and downtrodden segments of the population.

Earlier in his welcome address, Dr. Umrao Singh Chaudhari, Vice-Chancellor, Devi Ahilya Vishwavidyalaya, said economic policies should be humanitarian. It should focus on human welfare rather than growth. Economy was urgently in need of restructuring so that planning could become effectively decentralised and decision making and finances could be transferred to the village panchayats and to local bodies.

During the three days, the conference debated and discussed the theoretical and policy implications of the four subjects, viz., Globalisation of Indian Economy, Economics of Privatisation, Gender in Economic Theory and Economic Thought of Mahadeo Govind Ranade. Prof. P.R. Brahmananda, wellknown economist, delivered

D.T. Lakdawala Memorial Lecture and Dr. S.L. Rao, Director General, NCAER delivered the VKR Rao Memorial lecture. Two special sessions were held, viz., (a) 25 years of Indian Economic Thought, (b) Economy of Madhya Pradesh.

Over 300 delegates drawn from different parts of the country attended the conference.

The next conference would be held at Bombay and the topics proposed to be discussed are : (a) Financial Sector Reforms, (b) Economics of Health, (c) External Value of the Rupee, and (d) Economic and Social thought of Dr. B.R. Ambedkar.

### Depoliticising Varsities

A move is afoot to depoliticise universities in the country by doing away with elections to their various bodies as these had become the means of corrupting and vitiating the academic atmosphere in campuses.

This was one of the issues taken up by vice-chancellors of various universities who met in New Delhi recently to discuss the programme of action (POA), 1992 of the national education policy.

Election to the university bodies could be replaced by nomination based on rational norms is what has been suggested by the Gnanam Committee which went into alternative models of university management. The programme of action has recommended the acceptance of several recommendations of the Gnanam Committee.

The committee envisaged models appropriate to the nature, character and scope of the university with a view to ensure depoliticisation, greater academic participation in the university affairs, decentralisation with a system of inbuilt accountability and clear demarcation of powers and responsibilities among university authorities.

Among the recommendations of the Gnanam committee are changes in the character and composition of senate setup in universities, to make it a deliberative and recommendatory one, for the purpose of social auditing of the university system.

The committee has also suggested that the academic council should be the ultimate authority on all academic matters and the syndicate setup should be relieved of its all powerful status which leads to domination by unacademic vested interests on the university administration.

Further, it has been suggested that academics should have due representation in the university bodies. The creation of new structures or organisational sub-units to perform the various functions and responsibilities of the university has also been recommended.

The programme of action has also recommended that a model act for universities should be evolved which would suit the educational scenario of current times.

At the one-day meeting it was also discussed that the university management system could be reorganised on the lines of diverse models such as a presidential system where the vice-chancellor should be "advised" by the executive council or academic council.

Another model suggested is the bifurcated system with clear cut demarcation of power—administration and finances be vested with the executive council and academic management with the academic council.

A modified three-tier system with the senate as a deliberative and recommendatory body, free from elected component has also been suggested.

Alternatively the senate could be removed and the executive council and academic council could be the two authorities, suited to unitary and smaller universities.

The programme of action while recognising the need for providing additional funds for the higher education system has called for rationalising the norms of grants to the uni-

versities. Further, it has underlined the need for generating internal resources by the university system.

One of the ways internal re-

## माखनलाल चतुर्वेदी राष्ट्रीय पत्रकारिता विश्वविद्यालय, भोपाल

### प्रवेश - सूचना 1993-94

विश्वविद्यालय द्वारा सचालित पाठ्यक्रमों में शैक्षणिक वर्ष 1993-94 में प्रवेश के लिए आवेदन आमंत्रित है।

#### एकवर्षीय स्नातक उपाधि पाठ्यक्रम -

प्रवेश परीक्षा एवं साक्षात्कार रविवार एक अगस्त 1993 को आयोजित होगा। अन्य प्रदेशों में भी 20 से अधिक उम्मीदवार होने पर वहां परीक्षा केन्द्र बनाया जायेगा।

(1) पत्रकारिता	(2) जनसम्पर्क	(3) समाचारपत्र प्रबन्धन
(4) पुस्तकालय तथा सूचना विज्ञान		

न्यूनतम अर्हता - आवेदन को आवेदन का तिथि पर किसी भी मान्यता प्राप्त विश्वविद्यालय से किसी भी सकाय में न्यूनतम 50% अंक के साथ स्नातक उपाधि (अनुसूचित जाति/अनुसूचित जनजाति के लिए 45%) होना आवश्यक आयु सीमा - उम्मीदवार को 1 अगस्त 1993 को 25 (पुस्तकालय तथा सूचना विज्ञान के लिए 28) वर्ष से कम होना चाहिए।

अन्तिम तिथि - भेरे हुए आवेदन विश्वविद्यालय में प्राप्त होने की तिथि 5 जुलाई 1993 है।

शैक्षणिक सत्र - 6 सितम्बर से प्रारम्भ होगा।

#### एक वर्षीय स्नातकोत्तर उपाधि पाठ्यक्रम -

विश्वविद्यालय द्वारा इस वर्ष से प्रारम्भ किए जा रहे स्नातकोत्तर पाठ्यक्रमों (1) पत्रकारिता एवं जनसंचार (2) पुस्तकालय तथा सूचना विज्ञान में प्रवेश के लिए भी आवेदन आमंत्रित हैं।

प्रवेश, परीक्षा एवं साक्षात्कार रविवार 26 सितम्बर को भोपाल में आयोजित किया जायेगा।

न्यूनतम अर्हता - (1) पत्रकारिता एवं जनसंचार — किसी भी मान्यता प्राप्त विश्वविद्यालय से पत्रकारिता/जनसंचार/जनसम्पर्क में स्नातक उपाधि 45% अंकों के साथ आवेदन की तिथि तक उत्तीर्ण। (2) पुस्तकालय तथा सूचना विज्ञान — किसी भी मान्यता प्राप्त विश्वविद्यालय से पुस्तकालय तथा सूचना विज्ञान में स्नातक उपाधि 45% अंकों के साथ आवेदन की तिथि तक उत्तीर्ण। आयु सीमा - उम्मीदवार को 1 अप्रूव 1913 नो 30 वर्ष से कम होना चाहिए। अन्तिम तिथि - भेरे हुए आवेदन विश्वविद्यालय में प्राप्त होने की तिथि 23 अगस्त है।

शैक्षणिक सत्र - 4 अक्टूबर से प्रारम्भ।

विस्तृत विवरण एवं आवेदन पत्र के लिए 50/- रुपये का ड्राफ्ट अथवा पोस्टल आर्डर जो कि माखनलाल चतुर्वेदी राष्ट्रीय पत्रकारिता विश्वविद्यालय के नाम से भोपाल में देय हो के साथ निम्न पते पर लिखें :-

कार्यपालन मित्रशक,

माखनलाल चतुर्वेदी राष्ट्रीय पत्रकारिता विश्वविद्यालय,

पो.बा.न. आर.एस.ए.र.-६३, भोपाल - 462016

sources could be raised is by enhancing or rationalising the fee structure which on various counts has remained almost static during the last many years.

The UGC has set up a committee for central universities to explore means of finding additional resources.

### **U.K. Experts Visit Ambedkar Open University**

Two experts from U.K. Open University, Dr. Derek Pollard, Director Validation Services, and Mr. Chris Batten, Registrar (Academic) visited Dr. B.R. Ambedkar Open University and exchanged information on problems related to credit transfer and standardisation of assessment and evaluation procedures in the Open Universities. In a meeting with the Vice-Chancellor Prof. S. Bashiruddin, Rector Prof. C. Subba Rao and other senior faculty of the University they discussed matters relating to strengthening quality control in launching of new programmes by producing new course material.

Prof. Bashiruddin, while giving an overview of the current academic situation to the visitors, emphasised the need to strengthen the Study Centres at which the open university students received guidance and counselling. Production of learner-friendly materials was a top priority area for all open university academics, the Vice-Chancellor said.

The visit was sponsored by the Commonwealth of Learning, Vancouver, Canada.

### **Sri Sankara College — Deemed University**

The Union Minister for Human Resource Development, Mr. Arjun Singh, declared the Sri Sankara Arts and Science College, Enathur, Kanchipuram, as a deemed university.

The Minister, who recently inaugurated a centenary building at the college, dedicated to Sri Chandrasekharendra Saraswathi Swami, seniormost Acharya of the Kanchi Math, said that by declaring the college a deemed university, the institution was not being honoured, but the Government was honouring itself.

He said the college had proposed to establish an international library and the Centre was giving a one time grant of Rs. 1 crore to it. The Minister was certain that the library would develop as one of the best libraries in the world.

Mr. Singh described the university as an unique experiment.

Mr. Shivraj Paul, Lok Sabha Speaker, who released three books as part of the centenary souvenir, said that though the Government had opened the primary and high schools, besides colleges for arts, engineering, medicine and other subjects, "our youths did not know the country's ancient culture and spiritual background. What the younger generation needed most now is not just science and technology, but a knowledge of our culture to realise truth".

He was hopeful that with the blessings of Sri Chandrasekharendra Saraswathi the institution would impart both modern and ancient knowledge for youths to lead a meaningful life.

### **LU Pubn Divn**

The Lucknow University proposes to set up its own publication division — the first of its kind in the state. An announcement to this effect was made by the Vice-Chancellor, Prof. Mahendra Singh Sodha in Lucknow recently.

Dr. Mohd. Muzammil, Reader in the Department of Economics who has been appointed its first director, said that the need for a publication division in the university had been felt since a long time as the teachers were being subjected to arm-twisting tactics by private publishers. While accepting the manuscript the publishers generally promised a handsome royalty but after publication of the book the promise was never kept," said Dr. Muzammil. To support his point he said a former vice-chancellor of Lucknow University, Dr. Radha Kumar Mukherjee, who had over 20 books to his credit, had not been paid a single paise by a renowned publisher.

He said at times publishers sat tight on the manuscripts and published the book after two or three years. "By that time the data and graphs used become obsolete and the book is rejected by the students and teachers. Thus, the hard work of the author goes down the drain due to the lackadaisical approach of the publishers", he complained.

"Such a long gestation period disheartens the teacher and they drop the idea of writing books, if they cherished any in the first place", he said.

"The National Book Trust (NBT), too, is of no help," said Dr. Muzammil and added that instead of helping institutions the NBT was often hand in glove with the publishers.

He said the publication division would help in creating an interest among the university and associated college teachers. He hoped that the university would be able to publish 10-15 books annually.

Dr. Musammil said that the pub-

lication division would also assist in tiding over the financial crunch the university was facing these days by earning royalty which till now was going into the pockets of private publishers.

### **HSI Golden Jubilee Awards**

The Horticultural Society of India (HSI) is reported to have announced golden jubilee medals and awards to outstanding scientists for their contribution to horticulture research, education and development.

The golden jubilee medals were recently awarded to five distinguished scientists — Dr. S. Krishnamurthy, former President of HSI, Dr. S. K. Mukherjee, former head of the Indian Agriculture Research Institute, New Delhi, Dr. Kirti Singh, Vice-Chancellor, Indira Gandhi Agricultural University, Raipur, Dr. Vishnu Swarup, former project coordinator (ornamental crops) and Dr. K.L. Chadha, Deputy Director General (Horticulture), ICAR, New Delhi, in recognition of their outstanding contributions.

medium thick with broad leaves. PCB-141 is highly resistant to downy mildew under both natural and artificial epiphytic conditions. It has tolerance to ergot and smut diseases and is also resistant to lodging and shattering.

Mash 338 (Urdbcan) is a short duration variety suitable for Kharif season and its grain yield under normal conditions is 848 kg per hectare which shows an increase of 126.8 per cent against an earlier variety Mash 1-1 having grain yield of just 374 kg per hectare.

## **News from Agricultural Universities**

### **Nigeria and PAU to Exchange Scientists**

A five-member delegation of Nigeria headed by Mr. O.A. Edache, Director of Agriculture, Nigeria visited the Punjab Agricultural University recently. The purpose of the visit was to explore the possibilities of mutual cooperation.

According to Mr. Edache, Nigeria had already adopted many technologies developed by the University. He felt that there was much scope to receive technical advice in the field of development of water resources, farm machinery, etc. Already many experts from this University had worked in Nigeria but they needed the services of more experts, Dr. Edache said.

Mr. Usman, Head, National Seed Services, Nigeria showed keen interest in the cereal varieties developed at PAU. Other members of the delegation consisted of Dr. M.O. Aluko, Head, Plant Quarantine Service and Mr. N.S. Maini, Senior Seed Industry Development Adviser.

Dr. Khem Singh Gill, Vice-

Chancellor explained the role of PAU in Agricultural development and assured all the required cooperation. Dr. Gill presented a copy of his latest book, 'A Growing Agricultural Economy Technological Changes and Sustainability' to the leader of the delegation.

### **New Crop Varieties**

The Punjab State Variety Approval Committee has approved the release of seven new varieties of different crops.

These new varieties are : Pigeonpea (AL 201); Bajra (PCB 141); Urdbcan (Mash 338); Mentha (Russian Mint, Spear Mint); Sugarcane (CoJ 83, Co Pant 211)

AL-201 (Pigeonpea) variety has yellow flowers with prominent red streaks on standard petal. Its main stem is much longer than the side branches.

PCB-141 (Bajra) is a dual purpose variety suitable both for fodder and grain production. Its plants are

Russian Mint & Spear Mint (Mentha) are erect type and are less affected by rains. Root rot and rust diseases have not appeared on these varieties. Russian Mint has a distinct woody flavour which is highly demanded by flavour industry. Russian mint has the highest oil content. Similarly Spear Mint also recorded highest herb yield, highest oil content and highest oil yield than earlier local varieties.

CoJ 83 variety of sugarcane is meant for Gurdaspur and Amritsar districts while Co Pant 211 is suitable for whole of the Punjab State.

### **3 More KVKS for PAU**

The ICAR has sanctioned 3 more Krishi Vigyan Kendras (KVKS) to PAU. These KVKS will be set up in Sangrur, Ropar and Fazilgarh Sahib districts of Punjab. According to Dr. G.S. Gill, Director of Extn. Education, with the opening of these KVKS agricultural development in the state will get a fillip. At these KVKS young boys and girls will be provided training in specialized enterprises. Specialists of atleast 9 major disciplines of agriculture will be available at these KVKS. Already 6 KVKS have been working successfully in the state.

## News from UGC

### Countrywide Classroom Programme

Between 23rd June to 30th June, 1993 the following schedule of telecast on higher education through INSAT-ID under the auspices of the University Grants Commission will be observed. The programme is presented in two sets of one hour duration each every day from 1.00 p.m. to 2.00 p.m. and 4.00 p.m. to 5.00 p.m. The programme is available on the TV Network throughout the country.

#### Ist Transmission

1.00 p.m. to 2.00 p.m.

#### 23.6.93

- "Crocodile-II"
- "Missile Technology-III. Classification, Technology and Fallout"
- "Mensa: The Nature of Intelligence"

#### 24.6.93

- "Graphics with Microcomputers-IV. Graphics Programming"
- "Journey of the Magi"
- "Thomas Mann"

#### 25.6.93

- "Environment Education: In and Across the Borders-IV"
- "Starfinder-VIII. Orbital Motion"
- "Exploring Emotions"

#### 26.6.93

- "Question Forum"
- "Week Ahead"

#### 27.6.93

No Telecast

#### 28.6.93

"Laser—Raman Spectroscopy"

"Fresh from your Garden"

"Earthworms-III. Earthworms

Save Water for Better Agriculture"

#### 29.6.93

"Shapes and Symmetry of Molecules-I"

"Teacher Training in Lowcost Instrumentation : A Practical Approach"

"Heat Disorders"

#### 30.6.93

"Rhizoscope : Automatic Endoscopy for Study of Roots"

"An Introduction to Piston Design and Manufacturing"

"Archive : A Source for the Past"

#### IIInd Transmission

4.00 p.m. to 5.00 p.m.

#### 23.6.93

"Nature of Teaching"

"Ways of Thinking-VII"

"Diabetic Retinopathy"

#### 24.6.93

"Women in Development  
Malshiras - A Case Study"

"By the People-IV"

#### 25.6.93

"Question Forum"

"The Week Ahead"

#### 26.6.93

No Telecast

#### 27.6.93

No Telecast

#### 28.6.93

"Polarization of Light"

"General Agreement on Trade and Tariff-I"

"Oil Seeds-I"

#### 29.6.93

No Telecast

#### 30.6.93

"Save a Life"

"Ways of Thinking-VIII"

## News from Abroad

### Remote Access to Library

Documents in the British Library will be available to readers all over the world at the touch of a computer key by the year 2000. Once the sophisticated remote access technology is in place, the aim will be to deliver six million items a year to people in their homes or offices, screen to screen.

Launching the library's policy document for the next eight years, Dr Brian Lang, chief executive, said that the new technology would preserve books. "It will no longer be necessary for people to lay sweaty palms on priceless and frag-

ile documents," he said.

The library will also press the British Government to make the automatic deposit of computer material statutory to form a new archive of digital texts.

To achieve its objectives, however, the library will need more funds on top of the £ 450 million in public money given to the new British Library building in St. Pancras, north London.

Mr. Lang said an investment of about £ 3.5 million a year would be needed until the end of the decade.

## BOOK REVIEW

### A Comprehensive Treatise

S.S. Galshan\*

Shubha Mitter and S C Agarwal. Guide to Careers for Commerce Students. 2nd Rev. Ed. New Delhi, Sultan Chand & Sons, 1992. Pp. 476. Rs. 50/-.

*Guide to careers for commerce students* by Shubha Mitter and S.C. Agarwal is a comprehensive treatise on career opportunities available to commerce students.

The coverage is exhaustive, encompassing diverse fields such as the Public Defence Services, Banking, Insurance, Airlines and Sales. There are also special sections on Self Employment & Professional courses. Information regarding educational institutions, correspondence courses and scholarships is also provided.

The book serves a very useful purpose. The commerce graduates have many options available to

them. But lack of information as regards different options available would not make them choose career of their own choice i.e. in which they have aptitude and inclination. The book makes the information about different career opportunities available to them. The students can weigh the pros and cons of these alternatives and choose the career keeping in mind their own aptitude. In this way, the book fills information gap.

With the opening of the Indian economy, the scope for self-employment has increased. The book provides different work opportunities in this direction.

The scope of distance and non-formal education is increasing. The book provides not only the different courses available through corre-

spondence, but also enumerates different methods to select a correspondence course of one's choice. Further it provides guidance as to how to choose an Institute providing correspondence education.

The book also provides information regarding availability of loans/scholarships and special grants for pursuing different courses of study.

It also provides information regarding training facilities for the handicapped.

There has been, of late, a mushroom growth of educational institutions which call themselves as universities even though they are not recognised by the University Grants Commission. The book not only warns the graduates about the pitfalls of joining such universities, it also enumerates the recognised universities.

Last but not the least, the book provides information as regards job opportunities available outside India.

Thus the book is very exhaustive and as a result thereof has become slightly bulky containing about 500 pages.

### CALENDAR OF EVENTS

Proposed Date of the Event	Title	Objective	Name of the Organising Department	Name of the Organising Secretary/Officer to be contacted
July 12-16 1993	Programme on Modern Office Management	To impart skills to enable managers to enhance their effectiveness and productivity	National Institute of Small Industry Extension Training (NISIET), Hyderabad	The Registrar, NISIET Yousufguda Hyderabad-500 043
July 19-30 1993	Training Programme on Abstracting & Indexing	To cover principles of abstracting, indexing, searching and information technologies	Small Enterprises National Documentation Centre, Hyderabad	Mrs. K. Subhashini Course Director NISIET, Yousufguda Hyderabad-500 045

## THESES OF THE MONTH

**A list of doctoral degrees accepted by Indian Universities**

### **HUMANITIES**

#### **Philosophy**

- 1 Gohar, Swapna Kumar. Intellect and emotion in existentialism Rabindra Bharati
- 2 Kim, Hyoung Jun. Buddhist conception of anatman in the perspective of early Upanisads. Delhi
- 3 Ramachandran, B. Ends and means in Gandhi and Marx Osmania.
- 4 Roy, Srimati. Ethical implications of the maya hermeneutics in recent Indian thought. NBU
- 5 Shahpurkar, Jyoti Jai Prakash Narayan ka samajdarshan : Ek sameekshatmak vivechan. Vikram. Dr Surender Verma, 10 IHC, 1 Circular Road, Allahabad

#### **Religion**

- 1 Khan, Iqbal Mohd. Islamic movements in India after 1947 Jamia. Prof Majid Ali Khan, Department of Islamic Studies, Jamia Millia Islamia, New Delhi

#### **Fine Arts**

##### **Music**

- 1 Kaushik, Indu. Solhavin shatabdi mein Bhartiya sangeet ka vilas. Delhi.
- 2 Sharma, Vandana. Bhartiya sangeet mein amusandhan kee samasyayen. Delhi.

#### **Language & Literature**

- 1 Sahgal, Anju. Bilingualism and scholastic achievement. Delhi English

- 1 Anis Ahmad. Bernard Malamud's quest for the protagonist. Jamia. Dr Ansur Rehman, Department of English, Jamia Millia Islamia, New Delhi

- 2 Annie, K. Asceticism and mysticism . A search through the Doctrine of St John of the Cross. Kerala. Dr (Mrs) Jancy George, Reader, Institute of English, University of Kerala, Thiruvananthapuram

- 3 Bandyopadhyay, Bidyutikas. The intellectual response of the elites of Calcutta to Shakespeare since 1755. Calcutta

- 4 Dikshit, Hemlata. The theme of loneliness in the novels of Anita Desai. Devi Ahilya. Dr R C Ojha, Department of English, Indore Christian College, Indore.

- 5 George, Raju. Mythical elements in Raja Rao's novels. Kerala. Dr (Mrs) K Radha, Prof and Head, Institute of English, University of Kerala, Thiruvananthapuram

- 6 Ghosal, Sukriti. The literary criticism of Oscar Wilde . A critical evaluation. Burdwan Dr Mohit Kumar Roy, Prof, Department of English, University of Burdwan, Burdwan

- 7 Manesch, P. Ontology versus Catholicism in Graham Greene's major fiction. Kakatiya. Dr C Varadachari, Department of English, Kakatiya University, Warangal

- 8 Patnaik, Hemprasad Pancha. Dust at a distance Berhampur Prof B K Tripathy, Department of English, Utkal University, Bhubaneswar

- 9 Phulus, Diamond. Biblical symbols in the work of T S Eliot. Ravishankar Dr S B K Murthy, Qr 2 A, Street-28, Sector-8, Bhilamagar

10. Rajender Prasad, II. The humour of P G Woodhouse Osmania.

- 11 Tewari, Vinnder. Social consciousness in the novels of Joseph Conrad. Kurukshetra

### **Sanskrit**

1. Albcys, Pragya. Dhritreshtra ka jeevan darshan : Mahabharat ke sandarbh mein. Kumaun. Dr H N Dixit.
2. Guraram, Pushpaka. Kavya koshon ka sameekshatmak adhyayan. Kumaun. Dr H N Dixit.
3. Joshi, Kailash Chander. Yogaavashisthya samlochnatmak-adhyayan. Kumaun. Dr V D Pandey
4. Muralidharan, V R. Manameyodaya - A critical study Calicut. Dr K N N Elayath, Department of Sanskrit, University of Calicut, Calicut.
5. Puri, Nanda Jayanti. Sanskrit sahityateeti laghukshechi sankalpa anि swaroop Nagpur Dr Pankaj Chande, Anand College Samor, Siavardi, Nagpur
6. Santa Nagesa Bhatta-krita Manjusaon ke sandarbh mein nipaatartha-vivecana Kurukshetra.
7. Sharma, Sarva Mangala. Shri Samraj Dixit kee Sanskrit rachinayen ka sameekshatmak adhyayan. Devi Ahilya Dr H R Dholkiya, Government Sanskrit College, Indore
8. Sikri, Darshan Kumar Vasudeo Dikshita ka Sanskrit vyakarana ko yogdana. Delhi.

### **Pali**

1. Mukhopadhyay, Ramchandra. The jataka from aesthetic standpoint. Calcutta.

### **Punjabi**

1. Sukhwinder Singh. Generic study of the ballads in Guru Granth Sahib Jammu Dr Davinder Singh

### **Hindi**

1. Agrawal, Indranil. Chattisgarh ke nevrat lokgeeton ka sahit-yuk, sanskritik, samajshastriya evam lok latvik adhyayan Ravishankar Dr D K Jain, Asstt Prof, Department of Hindi, Govt Chhattisgarh College, Raipur

2. Agrawal, Suraj. Ramsnehi Sampradaya . Sahitya evam chitan. Osmania

3. Chote, Revaram Adhunik Hindi natkon mein nayuk Praveen vishesh sandarbh mein IIS Gaur Dr (Mrs) Anjali Anand, (Narmada Postgraduate College, Hoshangabad

4. Gadkari, Sandhya. Nal kavita ke natya kavyon ka saundarya-shastriyavaivechan Kumaun Dr Vijay Kulshreshtha

5. Goswami, Miranath Prasad sahitya ka chhand . Shastriyavaivechan Kumaun Dr D S Pokhanya

6. Joshi, Mridula Samkaleen Hindi kavita mein aam admi, 1970 se 1990 tak Kumaun Dr Dinesh Pathak

7. Kamla Devi. Kamayani evam Urvashi ke premiata ka tulnatmak adhyayan Kumaun Dr C C Rawal

8. Kansal, Anjul. Mahabharat strotka adhunik prabandhi kavyon ka sahitik anusheelan. Devi Ahilya Dr Ram Murthy Tripathy, Prof, Department of Hindi, Vikram University, Ujjain and Dr Ramesh Soni, Department of Hindi, Indore Christian College, Indore.

9. Mashival, Kishore Chander Premchand ke upanyasen ke bhasha sahit Kumaun Dr Mukul Pant

10. Matuyani, Tarulata. Hindi kahanikaron ke katha-chintan ke sandarbh mein unke kahani sahitya ka mulyankan Kumaun Dr L S Bishl

11. Nirmala, N. Rajendra Awasthy ke upanyasen mein anchalikta Bangalore. Dr T G Prabhachankar, Reader, Department of Hindi, Bangalore University, Bangalore.

12. Pandey, Asha. Bhartendu ke kavya mein bhakti evam riti kavya kee antardharan ka snusheelan. Kumaun. Dr V M Gupta.

13. Pan, Pritha. Kumaun mein parchait lok kathao sur lok gathaon ke kathamaneeya rupon evam abhiprayon ka lok tatvik adhyayan. Kumaun. Dr Vijay Kuldhesiha.

14. Rao, Asha. Shivani ke katha sahityama nari jeevan. SNDT Dr K D Bhagarkar, Head, Department of Hindi, Shreemati Naihibai Damodar Thackersey Women's University, Pune Campus

15. Saha, Neeta. Hindi evam Sanskrit kavya mein Vaidehi-charit ka tulnatmak adhyayan. Kumaun. Dr D D Tiwari.

16. Shukla, Pravinkumar Shankerlal. Paryogvadi sameeksha paddhati ke pariprekshya mein S H Vatsyan "Agycya" (Hindi) aur B C Mardekar (Marathi) ke sameeksha karya ka tulnatmak adhyayan. Nagpur. Dr Ghanshyam Vyas, Department of Hindi, Nagpur University, Nagpur.

17. Shyam Lal Madhya kalcen bhakt kavyon kee neeti bhanava. Osmania.

18. Tiwari, Dungar Dev. Kavivar Dinkar ke pravardhatar (Geet) kavyon ka shastrya adhyayan. Kumaun. Dr I S B Gahtoda.

#### Dogri

1. Shashi Kanu. Dogri verb. Jammu. Dr (Mrs) Veena Gupta, Reader, Department of Dogri, University of Jammu, Jammu

#### Urdu

1. Mohamad Waheeduddin. Azhar Afsar aur Urdu drama. Gulbarga. Dr B H Qureshi, Reader, Department of Urdu, Gulbarga University, Gulbarga.

2. Munawwar Husain. Urdu mein ilmi nesar, 1857-1914 : Samajiloom ke hawale se. AMU. Prof Manzoor Abbas Naqvi, Department of Urdu, Aligarh Muslim University, Aligarh

3. Naseh, Shamsuddin Ahmad. Preface writing in Urdu literature. Mithila. Dr Mansoor Umar, Post Graduate Department of Urdu, C M College, Darbhanga.

4. Parveen Jahan. Urdu mein mukhtasir afsana kee tanqid. AMU Prof A M K Shahryar, Department of Urdu, Aligarh Muslim University, Aligarh

5. Shameem Surayya. Muhammed Sulaiman Khateeb : Shakhsiyat aur fan. Gulbarga. Dr Mohd Tayyab Ansari, Reader, Government College, Gulbarga

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1. Biswas, Apurba. Rabindranather ritwaangit ebong kabitmanas. Calcutta

2. Das, Sumita Rupkothar prakshapat : Rabindranather kabita-o-gan. Calcutta.

3. Gangopadhyay, Shital. Madhyajuger Bangla sahitya Hindu - Muslim samaj-o-sanskriti. Burdwan. Dr Rabindrajan Chatterjee, Prof, Department of Bengali, University of Burdwan, Burdwan

4. Ghosh, Malay. Kshirode Prasad Vidyabhinode : Jivan O sahitya Rabendra Bharati

#### Oriya

1. Patnaik, Sabita. Gangadharan ka kavyare upama : Ek adhyayana. Sambalpur. Dr R N Meher, Lecturer, Gangadhar Meher Evening College, Sambalpur.

#### Marathi

1. Engole, Dilip Yashwantrao. Marathi bhachstotri Jain lokgeete : Ek abhyank, ivi san 1960 to lev 1970 pariyant. Nagpur. Dr Shankundia Khot, "Jaya-Nota" 52, Taverandasbapta, Nagpur.

2. Rajarkar, Suhas Lalit. Drishthantrapadya che vaagnayeeva ramiyamapan va chikitsak abhyas. Nagpur. Dr Bhau Mandvarkar, Principal (Retd), Indira Postgraduate College, Kolhapur.

#### Telugu

1. Hanumantha Reddy, K. A comparative study of the character of Karna in Telugu and Kannada Mahabharatas, Kavitraya, Pampa and Kumara Vyasa. Bangalore. Dr B Ramaiah, Department of Telugu, Bangalore University, Bangalore

2. Mutyalu Rao, Ganti Narla Jeevilham rachanalu : Oka parksheelana. Telugu

#### Geography

1. Abhe Singh. Crimes in Haryana : A spatio-temporal analysis, 1966-1985. Jamia. Prof Majid Hussain, Department of Geography, Jamia Millia Islamia, New Delhi.

2. Banerjee, Meenakshi. Industrial potentiality of Bankura District. Burdwan. Dr Monoranjan Choudhuri, Prof (Retd), Department of Geography, University of Burdwan, Burdwan.

3. Ghosh, Asim Kr. Relationship between landform and settlement in Bankura District, West Bengal. Burdwan. Dr Nikhil Krishna De, Prof, Department of Geography, University of Burdwan, Burdwan

4. Melkani, Lata Nainital Janpad kee jangankhya evam krishi upadan ka tulnatmak adhyayan. Kumaun. Dr D S Jalai

5. Pandey, Deepu. Land use and agricultural development in the U P Himalaya. Kumaun. Dr D C Pandey

6. Rawat, Krishan Singh. An integrated study of agro-ecosystem in Gomati Basin of Kumaun Himalaya. Kumaun. Dr R K Pandey

7. Ray, Piyali. Relationship between technology adoption in agriculture and sociocultural characteristics of farmers in West Bengal. Burdwan. Dr (Mrs) Champa Mitra, Prof, Department of Geography, University of Burdwan, Burdwan

8. Shukla, Ram Ujagir. A geographical study of environmental degradation and its impact on Nanital Town. Kumaun. Dr S K Singh

9. Singh, Rajakshmi. Central place system and spatial organization in Almora District. Kumaun. Dr S K Singh

10. Upadhyay, Kamla. Forest resource appraisal and environmental improvement in Pithoragarh District. Kumaun. Dr R Chand.

#### History

1. Aggarwal, Meenakshi. Uttar Pradesh Vidhan Parishad Vidhan Sabha mein Pandit Gobind Ballabh Pant ka yojan, 1923-1954. Kumaun. Dr A K Misra

2. Bhanda, Deepa. Hindi patrakarita mein Gandhiji ke parivruksh Andolanon ka partivimvan : Ek althihasik strot ke rup mei uska mulyankan. Kumaun. Dr G M Jaiswal

3. Faiyazi, Pushkar Dandi Yatra tatha Savinya Avagya Andolan mein Uttar Pradesh ka yojan 1930-34 levl. Kumaun. Dr Girdhar Singh Negi

4. Khan, Abdul Mabud. The Arakanese in Bangladesh : A socio-cultural study. Calcutta

5. Prem Prakash. Mugalkal ke Mirvaksh : Ek althihasik adyayan. Kumaun. Dr C M Aggarwal.

6. Saha, Anjana. British kateen Garhwali kee samajik evam arthiki sthitil : Ek althihasik punaravlokan, 1815-1947. Kumaun. Dr A K Misra

7. Sahu, Kishan Lal. Narsinghpur Jibe kee samajik evam arthiki naarakchana tatha tatembandhi samasyaos ka adhyayan, ana 1920 se 1964 tak. II S Gour. Dr S S Chachan, Department of History, Govt Postgraduate College, Narsinghpur.

8. Tiwari, Asha. Chhattisgarh mein krishak andolan : Ek althihasik amssheelaan, 1905-1947. Ravishankar Dr R N Mishra, Reader School of Studies in History, Pandit Ravishankar Shukla University, Raipur.

9. Vijay Kumar, T. Agrarian conditions in Andhra under British rule, 1953-1960. Osmania.

# BIRLA INSTITUTE OF TECHNOLOGY & SCIENCE

## PILANI, (RAJASTHAN) 333 031

Adv. No. 1/93/Admin.

The Birla Institute of Technology and Science (BITS) is an all-India Institution for men and women, fully residential and privately supported, and awards its own degrees.

### I. PROGRAMMES :

Admissions will be made on all-India basis strictly according to merit and suitability of the candidate to pursue the following programmes of studies

**I. Integrated First Degree Programme . Group A .** B.E. (Hons.) . Chemical; Civil, Computer Science; Electrical and Electronics, Instrumentation; Mechanical; B Pharm (Hons.), M.M.S (Master of Management Studies)

**Group B . M.Sc. (Hons.) .** Biological Sciences; Chemistry; Economics, Mathematics, Physics.

**Group C M.A. (Hons.) .** English, Finance, General Studies. M.Sc. (Tech) : Science & Technology Development, Engineering Technology; Information Systems

**Normal Input .** 12 year product of the Central/State Board 10+2 school system or its equivalent, with Physics, Chemistry, Mathematics and adequate proficiency in English

**Note . 1** All integrated first degree programmes are of 4 years duration

**2. Admissions are based on the normalized aggregate percentage of marks and there is no separate entrance examination.**

**2. Higher Degree Programmes . (a) M.E. (Collab) Project Engineering at DCL, Calcutta, Industrial Production at GRASIM, Nagda.**

**Duration .** Two years-one year of coursework and one year of Internship

**Normal Input .** Any integrated first degree of BITS or its equivalent with certain specified courses as described in the Bulletin

**(b) M.E. in Biotechnology, Chemical, Civil, Computer Science, Electronics & Control, Management Systems, Mechanical, Microelectronics (in collaboration with CEERI Pilani), Software Systems, Systems & Information, M. Pharm, M.Phil**

**Duration .** Normally three semesters

**Normal Input .** M.E. Chemical, Civil, Computer Science Mechanical-Integrated First degree of BITS in the same discipline or its equivalent Electronics & Control-Integrated first degree of BITS in Electrical & Electronics or in Instrumentation or its equivalent

**Microelectronics** Integrated first degree of BITS in Electrical & Electronics, or in Instrumentation, or in Computer Science, or in Physics or its equivalent

**Systems & Information, Software Systems** Any integrated first degree of BITS or its equivalent with specific prior preparation

**Management Systems** Integrated first degree of BITS in Management (MMS) or its equivalent

**Biotechnology** Any integrated first degree of BITS or its equivalent with adequate preparation in Biochemistry and Microbiology

### Admissions for I Semester 1993-94

**M.Pharm. .** Integrated first degree of BITS in Pharmacy or its equivalent.

**M.Phil :** Any Integrated first degree of BITS or its equivalent.

### 3. Doctoral Programmes leading to Ph.D.

**Normal Input** Any Higher degree of BITS or its equivalent.

**Off-campus Ph.D./Ph.D. Aspirants Scheme .** The scheme is aimed for professionals at large who have experience and proven competence, they may be even without a formal degree in rare cases. Under the scheme candidates will be allowed to pursue their studies in their own locations and on topics of research from their professional world

**Note .** For higher degree and Ph.D. programmes, Institute will conduct its own written tests and interviews at Pilani at the candidate's cost. While GATE score may have no bearing on admissions, it will enable a student to get UGC scholarship. Limited financial aid for deserving candidates may be possible

### 4. Nonformal degree Programme through Distance Learning for Professionals.

**(I) Integrated first degree programmes leading to B.S. in Engineering Technology, Finance, Information Systems, Industrial Management\*, Process Engineering\*, Engineering Practice\***

**Input .** Admissions in this degree programme are planned only for employed persons with about 2 years experience and with technical diploma or an undergraduate degree, like B.A., B.Sc., B.Com etc. The duration of the programme will be normally 3 years

**(II) M.S. degree Computer Science, Electronics & Control, Software Systems, Systems & Information, Science & Technology, Technological Operations, Pharmacy Operations, Physical Sciences\*, Life Sciences\*, Electronic Sciences\*, Engineering Management\*, Habitat Technology\*, Management Systems\*, M.Phil in Hospital and Health Systems Management\*\***

**Duration .** Normally three semesters

**Normal Input** Employed persons with relevant Integrated first degree of BITS or its equivalent

**Note . 1.** Since all the nonformal degree programmes are continuing educational programmes for human resource development, admission to these programmes will depend on the sponsorship of the employing organizations, the participation of the employing organizations in terms of creation of local study centres and infrastructural facilities, professional standing of the candidates, viable numbers and other prior preparations required

**2 \* Presently these programmes are offered specifically for employees sponsored by certain collaborating organizations. However, the Institute has an open mind to offer these programmes or devise any other innovative programmes if request comes from organizations interested in their Human Resource Development.**

**3 \*\* Admission to this programme is normally done only in second semester starting January 1994 through a separate advertisement**

## **II. Distinctive Features of the Educational Structure and some Special Provisions**

1. Admission with marginal deficiency, admission with advanced standing, admission in both the semesters, dual degree, transfer are some of the flexibilities permitted by the academic structure.
2. All students admitted to Group B programmes will be given an opportunity to work under the dual degree scheme for one of the Group A programmes, assignment being made by competition on their performance at BITS at the end of first year.
3. The Institute's well-known PRACTICE SCHOOL option is available to all students working for every degree in Groups A, B and C and higher degrees.
4. Diploma holders in engineering or other technical subjects may be considered for admission for suitable Group C programmes with advanced standing.
5. Students coming with integrated first degree of BITS in A and B groups may be considered for admission to any ME programme with the requirement of taking additional courses. The duration in these cases may be two years and will be determined on a case by case basis. Similar dispensation may also be possible for students coming with an engineering degree from IITs and other reputed institutions.
6. For admission to degrees like M E Systems & Information and Software Systems, preference will be given to students graduating from group C programmes of BITS who have shown an aptitude

to these programmes through electives, project courses and practice school work, etc

7. While admissions are open without reference to caste, creed, class or sex, special consideration is given to candidates belonging to scheduled castes and scheduled tribes.

Note : For all details candidates must consult the Bulletin.

## **III. APPLICATION PROCEDURE**

1. Separate application forms are prescribed for (i) Integrated First Degree Programmes in Group A, B and C, (ii) Higher Degree Programmes; (iii) Doctoral Programmes including Ph.D. Aspirants; (iv) B.S. degrees (Nonformal) and (v) M.S. degrees (non-formal).
2. To obtain the application forms and Bulletin 1993-94 separate request for each form must be made accompanied by a crossed Indian Postal Order for Rs 200/- (Rs. 350/- including airmail charges for sending to foreign countries) in the name of Admissions Officer payable to him at Pilani Post Office. The amount may also be sent through a crossed Demand Draft drawn in favour of Birla Institute of Science & Technology, on UCO Bank, Vidya Vihar, Pilani or State Bank of Bikaner & Jaipur, Pilani. All admission material will be sent by registered parcel post.
3. Deadline for submission of these completed application forms is 5.00 p.m. on 30th June, 1993.

April, 1993

**ADMISSIONS OFFICER**

## **ANNAMALAI UNIVERSITY FACULTY OF ENGINEERING & TECHNOLOGY ADMISSION TO B.PHARM. & D.PHARM COURSES - 1993-94 NOTIFICATION**

Applications are invited for admission to B.Pharm. and D Pharm. courses for the year 1993-94 Application form and Prospectus can be had from the REGISTRAR, ANNAMALAI UNIVERSITY, ANNAMALAINAGAR-608 002 on payment of Rs. 100/- for B Pharm. Course and Rs. 60/- for D.Pharm. Course in person or by post by sending a Demand Draft payable on Indian Bank or Bank of Madura Ltd., at ANNAMALAINAGAR or State Bank of India at CHIDAMBARAM in favour of the REGISTRAR, ANNAMALAI UNIVERSITY with a self addressed stamped envelope of size 30 cm x 13 cm affixing postage stamps to the value of Rs 2/- alongwith a requisition. Name and address of the candidate and course asked for should be clearly indicated on the backside of the Demand Draft. The application form together with the prospectus will be issued from 7.6.93

Last date for the receipt of filled in applications is 28.6.93

### **ENTRANCE EXAMINATION**

There will be an Entrance Examination for admission to B.Pharm. and D.Pharm. courses. The candidates are required to apply separately for the Entrance Examination application form. The Entrance Examination application form can be obtained from the REGISTRAR, on payment of Rs. 60/- (including the Registration fee) in person or by post by sending a Demand Draft in favour of the REGISTRAR, ANNAMALAI UNIVERSITY payable on Indian Bank or Bank of Madura Ltd., at ANNAMALAINAGAR or State Bank of India at CHIDAMBARAM

The last date for receipt of Entrance Examination filled in application form is 28.6.93.

The Entrance Examination will be held at Annamalainagar on 18.7.93 both Forenoon and Afternoon.

The University will not be responsible for any postal delay

No. K2/8/93

Annamalainagar

Dated: 29.5.93

**Dr. P.R. Karpagamapathy  
REGISTRAR**

# AGRICULTURAL SCIENTISTS RECRUITMENT BOARD

## (I.C.A.R.)

Krishi Anusandhan Bhavan, Pusa, New Delhi-110 012

Advertisement No. 3/93

Applications are invited for the following Scientific/Technical posts under the different Institutes and at the Headquarters of the Indian Council of Agricultural Research, New Delhi.

**1. ASSISTANT DIRECTOR GENERAL (Agril. Engg. Processes Engg.). ICAR Headquarters New Delhi. (One Post).**

*Pay Scale : Rs. 4500-7300. Age : below 50 years.*

*Qualifications Essential :* (i) An eminent Scientist with published work of high quality and actively engaged in research/teaching/extension education (ii) Good academic record with a doctoral degree in Agricultural Engineering or related disciplines. (iii) 15 years' experience (excluding the period spent in obtaining the Ph.D. degree subject to a maximum of 3 years) of research/teaching/extension education, out of which at least 5 years should be as Principal Scientist or in an equivalent grade. (iv) Evidence of substantial contribution to research and scholarship as evidenced by variety product or technology developed or adopted as a result of research; the quality of publication of papers in professional journals of repute; approved recommendations emanating from research or innovations in teaching/educational technology. (v) Specialisation and experience of research in the field of agricultural structures and processes engineering

**2. DIRECTOR (Indian Lac Research Institute, Ranchi) (One Post)**

*Pay Scale : Rs. 4500-7300. Age : below 50 years.*

*Qualifications Essential :* (i) As in Item No. 1(i) above. (ii) Good academic record with a doctoral degree in polymer sciences, applied/organic chemistry, zoology, and/or entomology or in any related subject. (iii) As in Item No. 1(iii) above. (iv) As in Item No. 1(iv) above. (v) Experience in working on 'RESINS' with specialisation in organic, Physical or Polymer Chemistry.

(Those candidates, who had applied for this post in response to Advt. No. 2/91 should also send fresh application. Fee already received would be adjusted)

### PROJECT COORDINATORS

*Pay Scale : Rs. 4500-7300. Age : below 50 years.*

**3. PROJECT COORDINATOR : (Salt Affect Soil and use of saline water in Agriculture), Central Soil Salinity Research Institute, Karnal. (One Post)**

*Qualifications Essential :* (i) As in Item No. 1(i) above. (ii) Good academic record with doctoral degree in Soil Science, Agronomy or Soil and Water Engineering. (iii) 13 years' experience (excluding the period spent in obtaining Ph.D. degree subject to maximum of three years) of research/teaching/extension education, out of which at least three years should be as a Principal Scientist or in an equivalent grade. (iv) As in Item No. 1(iv) above (v) Experience of research work related to salinity problems in agriculture.

**4. PROJECT COORDINATOR : (Long term fertilizer experiment). Indian Agricultural Research Institute, New Delhi. (One Post)**

*Qualifications Essential :* (i) As in Item No. 1(i) above. (ii) Good academic record with a doctoral degree in Soil Sciences, or related discipline. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(v) above. (v) Specialisation in Soil fertility and field experimentation

**5. PROJECT COORDINATOR : (Agricultural Meteorology) Central Research Institute for Dryland Agriculture, Hyderabad (One Post).**

*Qualifications Essential :* (i) As in Item No. 1(i) above. (ii) Doctorate in Agricultural Meteorology/Meteorology with distinguished record of productivity research. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Specialisation in crop weather relationship and other related aspects related to Agro-Weather advisory services.

**6. PROJECT COORDINATOR : (Tuber Crops). Central Tuber Crops Research Institute, Thiruvananthapuram. (One Post).**

*Qualifications Essential :* (i) As in Item No. 1(i) above. (ii) Good academic record with a doctoral degree in the field of Horticulture/Olericulture/Plant Breeding and Genetics/Agronomy/Plant Protection or related disciplines. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Specialisation in Breeding/Agronomy/Plant Protection/Extension Education on tuber crops and experience of research on tuber crops.

### HEADS OF DIVISIONS AND REGIONAL STATIONS

*Pay Scale : Rs. 4500-7300. Age : below 50 years.*

**NATIONAL DAIRY RESEARCH INSTITUTE, KARNAL.**

**7. HEAD DAIRY TECHNOLOGY DIVISION. (One Post)**

*Qualifications Essential :* (i) As in Item No. 1(i) above. (ii) Good academic record with a doctoral degree in the field of Dairy Technology/Food Technology/Dairy Science. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Relative specialisation and relevant experience in the Dairy Technology discipline.

**8. HEAD, DAIRY ENGINEERING DIVISION. (One Post).**

*Qualifications Essential :* (i) As in Item No. 1(i) above. (ii) Good academic record with a doctoral degree in the field of Agricultural Structures and Processes Engineering/Technology (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Relative specialisation and relevant experience in the Engineering and Technology discipline.

**9. HEAD, DES & M DIVISION. (One Post).**

*Qualifications Essential :* (i) As in Item No. 1(i) above. (ii) Good academic record with a doctoral degree in the field of Agril. Economics/Statistics/Dairy Economics/Agril. Statistics (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Specialisation/experience in Coordination and Management of Research programmes in the field of Agril. Economics/Agril. Statistics.

**10. HEAD, DAIRY MICROBIOLOGY DIVISION. (One Post).**

*Qualifications Essential :* (i) As in Item No. 1(i) above. (ii) Good academic record with a doctoral degree in the field of Dairy Bacteriology/Microbiology/Molecular Biology (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Specialisation and experience in Coordination and management of research programmes in the field of Dairy Bacteriology/Microbiology

**11. HEAD, Southern Regional Station of National Dairy Research Institute, Karnal and Bangalore. (One Post).**

*Qualifications Essential :* (i) As in Item No. 1(i) above. (ii) Good academic record with a doctoral degree in any branch of Dairy Science/Veterinary Science & Animal Science with specialisation in Dairy Production/Dairy Technology. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above (v) Specialisation in Dairy Cattle Production/Dairy Processing

**12. HEAD, DAIRY CATTLE NUTRITION DIVISION. (One Post).**

*Qualifications Essential :* (i) As in Item No. 1(i) above. (ii) Good academic record with a doctoral degree in Animal Nutrition/Animal Food Technology/Feed & Fodder Technology (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Specialisation/experience in Coordination and management of research programmes in the field of Animal Nutrition.

### **13. HEAD, DAIRY CHEMISTRY DIVISION. (One Post).**

*Qualifications Essential :* (i) As in Item No. 1(i) above. (ii) Good academic record with a doctoral degree in the field of Dairy Chemistry. (iii) As in Item No. 3(ii) above. (iv) As in Item No. 1(iv) above. (v) Specialisation/experience in coordination and management of research programmes in the field of Dairy Chemistry.

### **14. HEAD, DAIRY CATTLE PHYSIOLOGY DIVISION. (One Post).**

*Qualifications Essential :* (i) As in Item No. 1(i) above. (ii) Good academic record with a doctoral degree in the field of Veterinary/Animal Physiology/Animal Reproduction. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Specialisation/experience in Coordination and management of research programmes in the field of Animal Reproduction/Animal Physiology.

### **15. HEAD, ANIMAL BIOCHEMISTRY DIVISION. (One Post).**

*Qualifications Essential :* (i) As in Item No. 1(i) above. (ii) Good academic record with a doctoral degree in the field of Biochemistry/Animal Biochemistry/Dairy Chemistry. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Specialisation/experience in coordination and management of research programmes in the field of Biochemistry/Animal Biochemistry/Dairy Chemistry.

### **16. HEAD, DAIRY CATTLE BREEDING DIVISION. (One Post).**

*Qualifications Essential :* (i) As in Item No. 1(i) above. (ii) Good academic record with a doctoral degree in the discipline of Animal Genetics & Breeding/Animal Breeding/Animal Genetics/Dairy Husbandry/Livestock Production & Management. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Specialisation/experience in coordination and management of research Programme in the field of Quantitative Genetics/Population Genetics/Biometrical Genetics/Animal Breeding/Cytogenetics/Ommono Genetics/Molecular Genetics/Biochemical Genetics.

### **17. HEAD, DAIRY EXTENSION DIVISION. (One Post).**

*Qualifications Essential :* (i) As in Item No. 1(i) above. (ii) Good academic Record with a doctoral degree in the discipline in Agril.Extension/Dairy Extension. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Specialisation/experience in coordination and management of research programme in the field of Agril.Extension/Dairy Extension.

## **CENTRAL RICE RESEARCH INSTITUTE, CUTTACK**

### **18. HEAD PLANT BREEDING & GENETICS DIVISION. (One Post).**

*Qualifications Essential :* (i) As in Item No. 1(i) above. (ii) Good academic record with a doctoral degree in any branch of Plant Breeding & Genetics/Botany/Agricultural Botany or allied disciplines. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Specialisation and experience in the field of Rice Breeding and Genetics.

### **19. HEAD, SOIL SCIENCE & MICROBIOLOGY DIVISION. (One Post).**

*Qualifications Essential :* (i) As in Item No. 1(i) above. (ii) Good academic record with a doctoral degree in Soil Science/Agricultural Chemistry/Soil Microbiology. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Specialisation and experience in the field of rice soils.

### **20. HEAD, AGRICULTURAL ENTOMOLOGY DIVISION. (One Post).**

*Qualifications Essential :* (i) As in Item No. 1(i) above. (ii) Good academic record with a doctoral degree in Zoology/Agricultural Entomology/Life Sciences. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Specialisation and experience in the field of Rice Agricultural Entomology.

### **21. HEAD, PLANT PATHOLOGY DIVISION. (One Post).**

*Qualifications Essential :* (i) As in Item No. 1(i) above. (ii) Good academic record with a doctoral degree in Plant Pathology/Botany with thesis on Plant Pathology problems. (iii) As in Item No. 3(iii) above.

(iv) As in Item No. 1(iv) above. (v) Specialisation and experience in the field of Rice Pathology.

### **22. HEAD, AGRIL. ENGINEERING DIVISION. (One Post).**

*Qualifications Essential :* (i) As in Item No. 1(i) above. (ii) Good academic record with a doctoral degree in any branch of Agricultural Engineering. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Specialisation and experience in the field of Agricultural Engineering with specific reference to rice.

### **23. OFFICER-IN-CHARGE, CENTRAL RAINFOED UPLAND RICE RESEARCH STATION, HAZARIBAGH, BIHAR (Sub-Station of CRRI, Cuttack). (One Post).**

*Qualifications Essential :* (i) As in Item No. 1(i) above (ii) Good academic record with a doctoral degree in any branch of Agriculture/Botany/Zoology. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Specialisation and experience in field of upland Rice Research.

## **CENTRAL SOIL & WATER CONSERVATION RESEARCH & TRAINING INSTITUTE, DEHRADUN**

### **24. HEAD, PLANT SCIENCE DIVISION.**

*Qualifications Essential :* (i) As in Item No. 1(i) above (ii) Good academic record with doctoral degree in Forestry/Horticulture/Agronomy/with specialisation in plant science. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Relative specialisation and relevant experience cognate to job requirement under essential qualifications as : (i) Experience in conservation based Agro-Forestry. (ii) Experience in utilisation of degraded lands for Horticulture. (iii) Knowledge in modern methods of techniques for irrigation in Watershed management. (iv) knowledge in Russian/German/French.

### **25. HEAD, LAND & WATER DIVISION. (One Post).**

*Qualifications Essential :* (i) As in Item No. 1(i) above. (ii) Good academic record with a doctoral degree in Soil Science with Specialisation in Soil Physics/Soil and Water Conservation. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Relative specialisation and relevant experience cognate to the job requirement under essential qualifications as : (i) Experience in conservation based Agro-forestry. (ii) Knowledge in modern methods and of techniques in watershed management planning using G.I.S System. (iii) Knowledge of Russian/German/French

### **26. HEAD, ECONOMICS & PROJECT PLANNING DIVISION. (One Post).**

*Qualifications Essential :* (i) As in Item No. 1(i) above. (ii) Good academic record with a doctoral degree in Agricultural Economics/Statistics (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Relative specialisation and relevant experience cognate to job requirement under essential qualifications as : (i) Experience of evolution in conservation based Agricultural Economics and Project Planning. (ii) Knowledge in modern methods and of techniques for irrigation in Watershed management. (iii) Knowledge in Russian/German/French.

### **27. HEAD, RAINFOED AGRICULTURE AND WATER MANAGEMENT DIVISION. (One Post).**

*Qualifications Essential :* (i) As in Item No. 1(i) above. (ii) Good academic record with a doctoral degree in Agronomy/Botany/Soil science. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Relative specialisation and relevant experience cognate to job requirement under essential qualifications as : (i) Experience in Soil and Water Conservation and raised farming. (ii) Knowledge in modern methods and of techniques for irrigation in limited Water management. (iii) Knowledge in Russian/German/French.

### **28. HEAD, HUMAN RESOURCES DEVELOPMENT DIVISION. (One Post).**

*Qualifications Essential :* (i) As in Item No. 1(i) above. (ii) Good academic record with a doctoral degree in Soil Science/Forestry/Agronomy/Agril. Engineering/Horticulture. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Relative specialisation and relevant

experience cognate to job requirement under essential qualifications are : (i) Experience in Soil Conservation Training and transfer of Technology. (ii) Knowledge in modern methods and of techniques for irrigation in Watershed management. (iii) Knowledge of Russian/ German/ French.

#### CENTRAL SOIL SALINITY RESEARCH INSTITUTE, KARNAL

##### 29. HEAD, SOIL & CROP MANAGEMENT DIVISION

*Qualifications Essential :* (i) As in Item No. 1(i) above. (ii) Good academic record with a doctoral degree in Soil Science/Agronomy/ Crop Production. (iii) As in Item No. 3(ii) above. (iv) As in Item No. 1(iv) above. (v) Specialisation and experience in basic and applied research in the fields of Soil Science/Agronomy pertaining to salt affected soils and poor quality irrigation waters.

##### 30. HEAD, CROP IMPROVEMENT DIVISION. (One Post).

*Qualifications Essential :* (i) As in Item No. 1(i) above. (ii) Good academic record with a doctoral degree in Genetics/Plant Breeding/ Plant Physiology. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Specialisation and experience in Crop Breeding for salt tolerance or Physiological studies on salt tolerance of crops.

##### 31. HEAD DRAINAGE AND WATER MANAGEMENT DIVISION. (One Post).

*Qualifications Essential :* (i) As in Item No. 1(i) above. (ii) Good academic record with a doctoral/Master/M. Tech. Degree in Soil Water Conservation Engineering/Irrigation & Drainage Engineering. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Specialisation and experience in basic and applied researches in soil and water Conservation Engineering pertaining to reclamation of salt affected soils.

##### 32. HEAD, TECHNOLOGY EVALUATION & TRANSFER DIVISION. (One Post).

*Qualifications Essential :* (i) As in Item No. 1(i) above. (ii) Good academic record with a doctoral degree in extension education/agricultural/economics/agricultural extension. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Specialisation and experience in evaluation and transfer of technologies pertaining to salt affected soils.

##### 33. OFFICER-IN-CHARGE, CSSRI RESEARCH STATION, CANNING TOWN, West Bengal. (One Post).

*Qualifications Essential :* (i) As in Item No. 1(i) above. (ii) Good academic record with doctoral degree in soil sciences/agronomy/soil & water conservation engineering/plant breeding/extension education. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Experience in handling research programmes on reclamation and management of salt affected soils.

#### INDIAN AGRICULTURAL STATISTICS RESEARCH INSTITUTE, NEW DELHI

##### 34. HEAD, SAMPLE SURVEY METHODOLOGY AND ANALYSIS OF SURVEY DATA DIVISION. (One Post)

*Qualifications Essential :* (i) As in Item No. 1(i) above. (ii) Good academic record with a doctoral degree in agricultural statistics/statistics. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Experience in application of sample survey techniques in biological and agricultural research.

##### 35. HEAD, DIVISION OF EXPERIMENT AND ANALYSIS OF EXPERIMENTAL DATA. (One Post).

*Qualifications Essential :* (i) As in Item No. 1(i) above. (ii) As in Item No. 34(ii) above. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Experience in application of Design of Experiments and analysis of Experimental Data to biological and agricultural research.

##### 36. HEAD, COMPUTING SCIENCE DIVISION. (One Post).

*Qualifications Essential :* (i) As in Item No. 1(i) above. (ii) Good academic record with a doctoral degree in agricultural statistics/statistics with training in computing science or doctorate in any field related to computing science. (iii) As in Item No. 3(iii) above. (iv) As in Item

No.1(iv) above. (v) Experience of working on Model Computers and Software Applications in Statistical Methods/Biological and Agricultural Research Sciences.

##### 37. HEAD, STATISTICAL ECONOMICS DIVISION. (One Post).

*Qualifications Essential :* (i) As in Item No. 1(i) above. (ii) As in Item No. 34(ii) above. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Experience in application of economics to biological and agricultural research

##### 38. HEAD, BIO-STATISTICS & STATISTICAL GENETICS DIVISION. (One Post).

*Qualifications Essential :* (i) As in Item No. 1(i) above. (ii) As in Item No. 34(ii) above. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Experience in application of statistical genetics techniques/bio-statistics to biological and agricultural research.

##### 39. HEAD, FORECASTING TECHNIQUES FOR CROPS DISEASES & PESTS DIVISION. (One Post).

*Qualifications Essential :* (i) As in Item No. 1(i) above. (ii) Good academic record with a doctoral degree in agricultural statistics/statistics or related disciplines. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Experience in application of Forecasting Techniques in relation to production of crops and their diseases and pests.

#### CENTRAL PLANTATION CROPS RESEARCH INSTITUTE, KASARAGOD

##### 40. HEAD, PRE AND POST HARVEST TECHNOLOGY DIVISION. (One Post)

*Qualifications Essential :* (i) As in Item No. 1(i) above. (ii) Good academic record with doctoral degree in the relevant subject (Electronics & Instrumentation/Agril. Structure & Process Engineering/Farm Machinery and Power/Soil & Water Conservation Engineering) (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Relative specialisation and relevant experience cognate to the job requirement (Electronics & Instrumentation/Agril. structure & process engineering/ farm machinery & Power/soil & water conservation engineering).

##### 41. HEAD OF REGIONAL STATION, CENTRAL PLANTATION CROPS RESEARCH INSTITUTE, KASARAGOD. (One Post).

*Qualifications Essential :* (i) As in Item No. 1(i) above. (ii) Good academic record with a doctoral degree in the relevant subject (Agronomy/ Horticulture). (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Relative specialisation and relevant experience cognate to the job requirement (Agronomy/Horticulture).

#### INDIAN VETERINARY RESEARCH INSTITUTE, IZATNAGAR.

##### 42. HEAD, PARASITOLOGY DIVISION. (One Post)

*Qualifications Essential :* (i) As in Item No. 1(i) above. (ii) Good academic record with doctoral degree in veterinary parasitology/parasitology (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Specialisation and experience in the field of parasitology

##### 43. HEAD, EXTENSION EDUCATION DIVISION. (One Post).

*Qualifications Essential :* (i) As in Item No. 1(i) above. (ii) Good academic record with a doctoral degree in veterinary extension education/dairy education or agril. extension education. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Specialisation and experience in the field of extension education.

##### 44. HEAD, LIVESTOCK PRODUCTS & TECHNOLOGY DIVISION. (One Post).

*Qualifications Essential :* (i) As in Item No. 1(i) above. (ii) Good academic record with doctoral degree in Livestock Products Technology/Milk Science/Milk Technology/Dairy Technology. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Specialisation and experience in the field of livestock products technology.

##### 45. HEAD, PHARMACOLOGY & TOXICOLOGY DIVISION. (One Post).

*Qualifications Essential :* (i) As in Item No. 1(i) above. (ii) Good academic record with a doctoral degree in Pharmacology & Toxicology. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above.

(v) Specialisation and experience in the field of pharmacology and toxicology.

#### 46. HEAD, ANIMAL NUTRITION DIVISION. (One Post).

*Qualifications Essential :* (i) As in Item No.1(i) above. (ii) Good academic record with a doctoral degree in animal nutrition. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Specialisation and experience in the field of animal nutrition

#### 47. HEAD, ANIMAL GENETICS DIVISION. (One Post).

*Qualifications Essential :* (i) As in Item No 1(i) above. (ii) Good academic record with a doctoral degree in animal genetics and breeding (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Specialisation and experience in the field of animal genetics and breeding

#### 48. HEAD, BACTERIOLOGY AND MYCOLOGY DIVISION. (One Post).

*Qualifications Essential :* (i) As in Item No 1(i) above. (ii) Good academic record with a doctoral degree in veterinary bacteriology and virology or veterinary bacteriology. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Specialisation and experience in the field of veterinary bacteriology.

#### 49. HEAD, VIROLOGY DIVISION. (One Post).

*Qualifications Essential :* (i) As in Item No 1(i) above. (ii) Good academic record with a doctoral degree in Veterinary bacteriology and virology or veterinary virology. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Specialisation and experience in the field of veterinary virology.

#### 50. HEAD, VETERINARY PUBLIC HEALTH DIVISION. (One Post)

*Qualifications Essential :* (i) As in Item No 1(i) above. (ii) Good academic record with a doctoral degree in veterinary public health. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Specialisation and experience in the field of veterinary public health

#### 51. HEAD, BIOLOGICAL PRODUCTS DIVISION. (One Post)

*Qualifications Essential :* (i) As in Item No 1(i) above. (ii) Good academic record with a doctoral degree in veterinary bacteriology and virology (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Specialisation and experience in the field of veterinary bacteriology and virology.

#### 52. HEAD, STANDARDIZATION DIVISION. (One Post).

*Qualifications Essential :* (i) As in Item No 1(i) above. (ii) Good academic record with a doctoral degree in veterinary bacteriology and/or virology (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Specialisation and experience in veterinary standardisation.

#### 53. HEAD, EXPERIMENTAL MEDICINE & SURGERY DIVISION. (One Post)

*Qualifications Essential :* (i) As in Item No.1(i) above. (ii) Good academic record with a doctoral degree in Veterinary Medicine or Veterinary Surgery (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Specialisation and experience in the field of veterinary medicine or veterinary surgery.

#### 54. HEAD, LIVESTOCK ECONOMICS & STATISTICS DIVISION. (One Post).

*Qualifications Essential :* (i) As in Item No 1(i) above. (ii) Good academic record with a doctoral degree in Agricultural Livestock Economics or Statistics or Bio-Statistics. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Specialisation and experience in the field of agri-livestock economics or statistics or bio-statistics.

#### 55. HEAD, PHYSIOLOGY & CLIMATOLOGY DIVISION. (One Post).

*Qualifications Essential :* (i) As in Item No.1(i) above. (ii) Good academic record with a doctoral degree in animal physiology. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Specialisation and experience in the field of animal physiology and climatology.

#### 56. HEAD, PATHOLOGY DIVISION. (One Post).

*Qualifications Essential :* (i) As in Item No 1(i) above. (ii) Good academic record with a doctoral degree in Veterinary pathology. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Specialisation and experience in the field of veterinary pathology.

demographic record with a doctoral degree in Veterinary pathology. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Specialisation and experience in the field of veterinary pathology.

#### 57. HEAD, AVIAN DISEASES DIVISION. (One Post).

*Qualifications Essential :* (i) As in Item No.1(i) above. (ii) Good academic record with a doctoral degree in veterinary bacteriology & virology/veterinary pathology/veterinary Virology/Veterinary immunology/Veterinary Parasitology. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Specialisation and experience in the field of Avian Diseases

#### 58. HEAD, ANIMAL REPRODUCTION DIVISION. (One Post).

*Qualifications Essential :* (i) As in Item No.1(i) above. (ii) Good academic record with a doctoral degree in animal gynaecology/animal gynaecology and obstetrics/animal reproduction. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Specialisation and experience in the field of animal gynaecology/animal gynaecology and obstetrics/animal reproduction.

#### 59. HEAD, BIOCHEMISTRY AND FOOD SCIENCE DIVISION. (One Post)

*Qualifications Essential :* (i) As in Item No 1(i) above. (ii) Good academic record with a doctoral degree in Biochemistry/food science. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Specialisation and experience in the field of biochemistry and food science.

#### 60. HEAD, EPIDEMIOLOGY DIVISION. (One Post).

*Qualifications Essential :* (i) As in Item No.1(i) above. (ii) Good academic record with a doctoral degree in veterinary bacteriology and/or virology. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Specialisation and experience in the field of epidemiology.

#### CENTRAL ARID ZONE RESEARCH INSTITUTE, JODHPUR

#### 61. HEAD, ENERGY MANAGEMENT ENGINEERING AND PRODUCT PROCESSING DIVISION. (One Post).

*Qualifications Essential :* (i) As in Item No.1(i) above. (ii) Good academic record with a doctoral degree in organic chemistry/chemical engineering/farm machinery & Power/Argil structure and processing engineering/electronic instrumentation (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Relative specialisation and relevant experience cognate to the job requirement.

#### 62. HEAD, RESOURCE SURVEY & MONITORING DIVISION. (One Post)

*Qualifications Essential :* (i) As in Item No 1(i) above. (ii) Good academic record with a doctoral degree in pedology/geography/economic botany. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Relative specialisation and relevant experience cognate to the job requirement.

#### 63. HEAD, RESOURCE MANAGEMENT DIVISION. (One Post)

*Qualifications Essential :* (i) As in Item No.1(i) above. (ii) Good academic record with a doctoral degree in the soil physics and soil & water conservation/agronomy agricultural meteorology. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Relative specialisation and relevant experience cognate to the job requirement.

#### 64. HEAD, PERENNIAL CROPPING SYSTEM DIVISION. (One Post)

*Qualifications Essential :* (i) As in Item No.1(i) above. (ii) Good academic record with a doctoral degree in the fruit/horticulture/economic botany/genetics and cyto-genetics in trees/entomology. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Relative specialisation and relevant experience cognate to the job requirement.

#### 65. HEAD, OUT REACH PROGRAMME DIVISION. (One Post)

*Qualifications Essential :* (i) As in Item No.1(i) above. (ii) Good academic record with a doctoral degree in agril. extension/home science/soil and water conservation engineer/agronomy/soil physics, soil and water conservation. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Relative Specialisation and relevant experience cognate to the job requirements.

## **66. HEAD, ANIMAL SCIENCE & RODENT CONTROL DIVISION. (One Post).**

*Qualifications Essential :* (i) As in Item No.1(i) above. (ii) Good academic record with a doctoral degree in animal physiology/animal nutrition/livestock production management/animal bio-chemistry. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Relative specialisation and relevant experience cognate to the job requirement.

## **67. HEAD, SOCIAL AND INFORMATION SCIENCE DIVISION. (One Post)**

*Qualifications Essential :* (i) As in Item No.1(i) above. (ii) Good academic record with a doctoral degree in the agricultural economics/agricultural statistics/agricultural extension (Rural Sociology). (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Relative specialisation and relevant experience cognate to the job requirement.

## **INDIAN AGRICULTURAL RESEARCH INSTITUTE NEW DELHI**

## **68. HEAD, MYCOLOGY AND PLANT PATHOLOGY DIVISION. (One Post).**

*Qualifications Essential :* (i) As in Item No.1(i) above. (ii) Good academic record with a doctoral degree in mycology and/or plant pathology or botany, agricultural botany or agricultural based on plant pathologic investigation or agricultural importance. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Ability to plan, organise, guide and conduct research on one or more aspects of plant pathology and practical problems of disease control in crops.

## **69. HEAD, ENTOMOLOGY DIVISION. (One Post).**

*Qualifications Essential :* (i) As in Item No.1(i) above. (ii) Good academic record with a doctoral degree in Entomology/Zoology/Agricultural based on Entomological Investigation of Agricultural importance. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Ability to plan, organise, guide and conduct research on various problems of pest control both in the field and under storage conditions and knowledge of modern methods of techniques applicable to various branches of agricultural entomology and pest control.

## **70. HEAD, AGRICULTURAL ENGINEERING DIVISION. (One Post)**

*Qualifications Essential :* (i) As in Item No 1(i) above. (ii) Good academic record with a doctoral degree in Agricultural or Mechanical Engineering or equivalent. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Ability to plan, organise, guide and conduct research on one or more aspects of agricultural engineering and practical problems in the designing of agril. implements and machinery and in the development of farm lands, village and/or water management particularly irrigation and drainage engineering.

## **71. HEAD, SOIL SCIENCE & AGRICULTURAL CHEMISTRY DIVISION. (One Post).**

*Qualifications Essential :* (i) As in Item No 1(i) above. (ii) Good academic record with a doctoral degree in soil science and/or agricultural chemistry with doctoral research based on work in soil science or agricultural chemistry. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Ability to plan, organise, guide and conduct research on one or more aspects of soil science and agricultural chemistry and practical problems of soil related constraints in agriculture, soil fertility and fertiliser use.

## **72. HEAD, AGRONOMY DIVISION. (One Post)**

*Qualifications Essential :* (i) As in Item No 1(i) above. (ii) Good academic record with a doctoral degree in Agronomy. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Ability to plan, organise, guide and conduct research in Agronomy.

## **73. HEAD, MICROBIOLOGY DIVISION. (One Post).**

*Qualifications Essential :* (i) As in Item No 1(i) above. (ii) Good academic record with a doctoral degree in microbiology or botany based on research work on any one or major branches of agricultural microbiology. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Ability to plan, organise, guide and conduct research on one

or more aspects of microbiology and practical problems or research work of microbial metabolism, production of microbial inoculation and biological nitrogen fixation by different micro-organisms.

## **74. HEAD, BIOCHEMISTRY DIVISION. (One Post).**

*Qualifications Essential :* (i) As in Item No.1(i) above. (ii) Good academic record with a doctoral degree in biochemistry/Agricultural biochemistry. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Ability to plan, organise, guide and conduct research on one or more aspects of plant biochemistry and practical problems of agricultural interest.

## **75. HEAD, PLANT PHYSIOLOGY DIVISION. (One Post).**

*Qualifications Essential :* (i) As in Item No.1(i) above. (ii) Good academic record with a doctoral degree in plant physiology/botany/Agricultural botany/crop physiology. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Ability to plan, organise, guide and conduct research on one or more aspects of plant physiology and its application to agricultural productivity.

## **76. HEAD, AGRICULTURAL ECONOMICS DIVISION. (One Post).**

*Qualifications Essential :* (i) As in Item No.1(i) above. (ii) Good academic record with a doctoral degree in Agril. Economics/Economics with Agricultural background. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Ability to plan, organise, guide and conduct research in different branches of Agril. Economics.

## **77. HEAD, NEMATOLOGY DIVISION. (One Post).**

*Qualifications Essential :* (i) As in Item No.1(i) above. (ii) Good academic record with a doctoral degree in Nematology or in Zoology/Entomology/Plant pathology with specialisation in Nematology. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Ability to plan, organise, guide and conduct research in Nematology.

## **78. HEAD, AGRIL. EXTENSION DIVISION. (One Post).**

*Qualifications Essential :* (i) As in Item No.1(i) above. (ii) Good academic record with a doctoral degree in Agril. Extension or related discipline with specialisation in Agricultural Extension. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Ability to plan, organise and conduct research and teaching in Agricultural Extension.

## **79. HEAD, AGRIL. PHYSICS DIVISION. (One Post).**

*Qualifications Essential :* (i) As in Item No.1(i) above. (ii) Good academic record with a doctoral degree in Physics, soil physics, environmental physics or bio-physics. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Ability to plan, organise, guide and conduct research in different branches of Agricultural Physics.

## **80. HEAD, SEED SCIENCE & TECHNOLOGY DIVISION. (One Post).**

*Qualifications Essential :* (i) As in Item No 1(i) above. (ii) Good academic record with a doctoral degree in botany and/plant physiology/or in genetics and/or plant breeding or any aspect of crop improvement with special bearing on seed technology (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Ability to plan, organise, guide and control research in seed technology.

## **81. HEAD, AGRIL. CHEMICALS DIVISION. (One Post).**

*Qualifications Essential :* (i) As in Item No.1(i) above. (ii) Good academic record with a doctoral degree in Organic and/or analytical chemistry/or agril. chemistry. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Ability to plan, organise, guide and conduct research in the field of pesticide residue research and the synthesis of new Agril. Chemicals.

## **82. HEAD, FLORICULTURE & LANDSCAPING DIVISION. (One Post).**

*Qualifications Essential :* (i) As in Item No.1(i) above. (ii) Good academic record with a doctoral degree in horticulture/plant breeding and genetics (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Ability to plan, organise, guide and conduct research in the field of floriculture.

### **33. HEAD, FRUITS & HORTICULTURAL TECHNOLOGY DIVISION. (One Post).**

**Qualifications Essential :** (i) As in Item No 1(i) above. (ii) Good academic record with a doctoral degree in horticulture/botany/agri botany with specialisation in horticultural crops. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Ability to plan, organise, guide and conduct research in different branches of horticulture and fruits technology.

### **34. HEAD, GENETICS DIVISION. (One Post)**

**Qualifications Essential :** (i) As in Item No.1(i) above. (ii) Good academic record with a doctoral degree in Genetics and/or cytogenetics and/or plant breeding/botany with research background in genetics and plant breeding. (iii) As in Item No. 3(iii) above. (iv) As in Item No. 1(iv) above. (v) Ability to plan, organise, guide and conduct research in genetics/cytogenetics/plant breeding.

### **35. HEAD, VEGETABLE CROPS DIVISION. (One Post)**

**Qualifications Essential :** (i) As in Item No 1(i) above. (ii) Good academic record with a doctoral degree in horticulture/plant breeding/genetics with specialisation in breeding of vegetable crops/plant physiology. (iii) As in Item No 3(iii) above. (iv) As in Item No 1(iv) above. (v) Ability to organise, guide and conduct research on one or more aspects of vegetable breeding and to plan the production of nucleus and foundation seeds of temperate and other vegetable crops.

### **36. PRINCIPAL SCIENTIST (Plant Physiology) Water Technology Centre, Indian Agricultural Research Institute, New Delhi (One Post)**

**Pay Scale :** Rs. 4500-7300 **Age :** Below 50 years.

**Qualifications Essential :** (i) As in Item No 1(i) above. (ii) Good academic record with a doctoral degree in Plant Physiology and 10 years experience (excluding the period spent in obtaining the Ph D Degree subject to a maximum of 3 years) of research teaching/extension education provided that atleast three years is as a senior scientist or in an equivalent grade. (iii) Evidence of substantial contribution to research and scholarship as evidenced by variety product or technology developed or adopted as a result of research; the quality of publication of papers in professional journals of results and innovations in teaching/extension education. (iv) Experience of working on mechanism of drought resistance, including the knowledge of modern biochemical and molecular methods of analysis.

### **37. SENIOR PHOTO OFFICER (Grade T-7 Technical). Indian Council of Agricultural Research Headquarters, New Delhi. (One Post).**

**Pay Scale :** Rs. 3000-4500 **Age :** Below 45 years

**Qualifications Essential :** (i) Sound General Education. (ii) Atleast 5 years' experience in a supervisory capacity in photographic studio of repute with proficiency in all branches of Photography News & Colour photography (iii) Adequate knowledge of India's Agriculture & progress of Planned Development.

### **38. ARCHITECT (Grade T-7, Technical), Indian Council of Agricultural Research, Headquarters, New Delhi. (Reserved for ST candidates). (One Post)**

**Pay Scale :** Rs. 3000-4500 **Age :** Below 50 years.

**Qualifications Essential :** (i) Three years Diploma/Bachelor's Degree in relevant field. (ii) Atleast 5 years' experience.

#### **IMPORTANT NOTES :**

- (i) Explanation for the purpose of qualifications in respect of Scientific posts at S.No. 1 to 86 above.  
"An ARS Scientist/induced/recruited in a particular discipline shall be deemed to have acquired requisite qualifications in the relevant subject"
- (ii) In respect of posts appearing at S.No. 5 and 6 the candidates of ICAR Scientists who were holding S-2 and S-3 positions as on 31-12-85 will also be considered on the basis of criteria of old qualifications as applicable to these posts prior to 1.1.86.

- (iii) The posts appearing at S.No. 1 to 86 will be filled up on tenurial basis for a period of five years.

#### **CLOSING DATE FOR RECEIPT OF APPLICATIONS IN AGRICULTURAL SCIENTISTS RECRUITMENT BOARD OFFICE IS JULY 27, 1993.**

(For candidates from abroad and in the Andaman and Nicobar Islands, Lakshadweep, Minicoy and Amindivi Islands, State/Union Territories in the North Eastern Region, Ladakh Division of J&K State, Sikkim, Pangi Sub-Division of Chamba, Lahaul & Spiti districts of Himachal Pradesh, Last date will be August 12, 1993.

#### **GENERAL INSTRUCTIONS :**

- For application forms, please write to the Secretary, Agricultural Scientists Recruitment Board, Krishnamandhan Bhawan, Pusa, New Delhi-110 012. Request for forms must specify Advertisement No. 3/93, Name of the post and Item No. and should be accompanied by a self addressed unstamped envelope (23 x 10 cms. size).
- Separate application, with separate fee, is required for each post.
- Application forms complete in all respects, should reach office of the ASRB together with the application fee of Rs. 2/- (No fee for SC/ST candidates) in the form of crossed Indian Postal Order drawn in favour of the SECRETARY, INDIAN COUNCIL OF AGRICULTURAL RESEARCH by the closing date. Applications received after the closing date will not be entertained **IN CASE A CANDIDATE ANTICIPATES DELAY IN FORWARDING OF HIS APPLICATION THROUGH PROPER CHANNEL, HE MUST SEND AN ADVANCE COPY OF THE APPLICATION ALONG WITH THE FEE, WHICH MUST REACH THIS OFFICE ON OR BEFORE THE CLOSING DATE.**
- Candidates abroad may apply on plain paper and send their applications together with an International Postal Order/Bank Draft covering the application fee drawn in favour of the Secretary, INDIAN COUNCIL OF AGRICULTURAL RESEARCH so as to reach the office of the ASRB by the closing date. In countries where regular commercial channels are not available, the candidates can deposit the application fee in local currency with the Indian Missions/Posts abroad, who in turn will issue an RBI draft in favour of SECRETARY, ICAR, NEW DELHI.
- Only the candidates belonging to SC/ST would be considered against the respective reserved posts. As such, General candidates NEED NOT APPLY against the reserved posts.
- Crucial date for determining the age limit for candidates for each post, will be the closing date for receipt of applications from candidates in India. There will be no maximum age limit for ICAR Employees. Relaxation in age is allowed to SC/ST persons to the extent permissible under the rules.
- The prescribed Essential Qualifications are minimum and possessing of same does not entitle candidates to be called for interview. Where the number of applicants is large, the Board may restrict the number of candidates for interview to a reasonable limit on the basis of qualifications and experience higher than the minimum prescribed in the advertisement.
- For all Technical posts and other Non-Scientific positions, a screening test may be conducted by the Board, to be followed by an interview.
- T.A. contribution will be admissible to those called for interview as per ICAR Rules.
- If required, candidates must appear for personal interview.
- Higher initial pay may be recommended by the ASRB for special qualified and experienced candidates for all the posts.
- Convicting, in any form, will disqualify a candidate.

davp 93/77

# National Board for Higher Mathematics (NBHM)

## Department of Atomic Energy, Government of India

From  
The Library Grants Committee

27th May 1993

To the kind ATTENTION of the  
Faculty, Departments of Mathematics,  
Universities/University PG Centres/Institutes in India

This is to draw your kind attention to say that the following self-explanatory letter together with a request proforma has been mailed to the Heads of the Departments of Mathematics of all the Universities, University PG Centres and Institutes in India whose addresses we could get hold of. It is possible that the letter has not reached your particular Department for some reason or the other (please check). If so, please take a copy of the following letter and the request proforma in lieu of that meant for your Department and help do the needful. Thanks.

Sd/- (C. Musili)

### Letter to Univ. Depts. of Mathematics

To  
The Head of the Department of Mathematics,  
----- University/University PG Centre/Institute.

Dear Professor

I am pleased to inform you that the NBHM has decided, in its Library Policy, to supply complimentary copies, on request, to the Libraries of the Mathematics Departments/Universities/Institutes in our country, of some of its publications as well as some titles published by others which are selected by NBHM from time to time. (The undersigned has been entrusted with the responsibility of helping and monitoring this initiative of NBHM).

The basis of the choice of the titles is mainly to cater to the need of students at M.Sc/M.Phil levels though some are meant also for post M.Phil levels. As of present, NBHM will be happy to send your Department copies of all the titles chosen to date but in order to get an idea of the needs of your Department in future, I would appreciate your indicating on the accompanying request proforma whether you consider the titles mentioned therein as needed on a FIRST or SECOND priority basis.

On receiving the copies requested for, please ensure that the books are duly processed by the Library of your Department/University/Institute and the particulars of the accession numbers, etc., are sent to me in course of time. This information serves as a feed back from you to enable NBHM to register your continued interest in the scheme and also to send you copies of the subsequent titles in future.

Any suggestions to NBHM in its endeavours to help mathematics libraries in the country are most welcome. Please fill in the enclosed request proforma and return it to the address given therein within 15 days of the receipt of this letter. Looking forward to your esteemed cooperation.

Yours faithfully,  
Sd/- (C. Musili)  
(for Library Grants Committee)

### Request Proforma

From (full address of the Department)

Date.

To  
Professor C. Musili,  
School of Mathematics and CIS,  
University of Hyderabad, P O  
Central University,  
Hyderabad 500 134

Dear Prof. Musili,

Please arrange to send the NBHM complimentary copies for the Library of our Department/University/Institute. We have indicated the priorities of our needs by means of a tick mark (✓)

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Applications in the prescribed forms are invited for admission to both M.Sc. and Ph.D. programmes at the I.A.R.I. in various disciplines of agricultural sciences as per details below :—

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**MINIMUM QUALIFICATION FOR ADMISSION TO M.Sc.**

Only those candidates who have a Bachelor's degree under the 10+2+4 or 10+2+3 or 10+1+4 (or have a Bachelor's degree under 10+2+2 systems prior to 1985) and fulfil the qualifications prescribed below shall be eligible for consideration for admission.

The candidates must satisfy one of the qualifications as indicated against the relevant discipline to which admission is sought and should have obtained a minimum of 60% marks or a cumulative grade point average of 3.75 out of 5.00 or 3.00 out of 4.00 or 2.25 out of 3.00 (55% of marks or 3.44 out of 5.00 or 2.75 out of 4.00 or 2.06 out of 3.00 for SC/ST candidates) at Bachelor's degree examination.

Name of the Discipline	Qualifications
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Computer Application in Agriculture	Bachelor's degree in Agriculture OR Computer Science OR Agricultural Engineering OR Bachelor's degree in Science with Mathematics OR Statistics OR Physics as one of the subjects.
Environmental Sciences	Bachelor's degree in Agriculture OR Agricultural Engineering OR Bachelor's degree in Science with Honours (OR as the main subject) in Physics OR Chemistry OR Botany OR Zoology OR Microbiology.
Microbiology	Bachelor's degree in Agriculture OR Bachelor's degree with Honours in Microbiology OR Botany OR Bachelor's degree in Science with Microbiology.
Molecular Biology and Biotechnology	Bachelor's degree in Agriculture OR Horticulture OR Bachelor's degree in Science with Botany Honours OR Chemistry Honours OR Biochemistry Honours OR Microbiology Honours OR

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Bachelor's degree in Agriculture OR Bachelor's degree in Science with Botany Honours OR Botany as the main subject.

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**Plant Physiology**  
Bachelor's degree in Agriculture OR Bachelor's degree in Science with Botany Honours OR Botany as the main subject.

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**Age Limit**  
The minimum age limit for admission to M.Sc. shall be 19 years. The age shall be reckoned as on 31st December, 1993. No relaxation is admissible regarding the minimum age limit.

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**MINIMUM QUALIFICATION FOR ADMISSION TO Ph.D.**

The candidates must satisfy one of the qualifications as indicated against the relevant discipline to which admission is sought and should have obtained minimum of 60% marks or a cumulative grade point average of 3.75 out of 5.00 or 3.00 out of 4.00 or 2.25 out of 3.00 (55% marks or 3.44 out of 5.00 or 2.75 out of 4.00 or 2.06 out of 3.00 for SC/ST candidates) at the Master's degree examination.

Name of Discipline	Qualifications
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The Entrance Examination will be held at Annamalainagar on Saturday the 17th July 1993 both Forenoon and Afternoon.

The University will not be responsible for any postal delay.

No. K2/7/93  
Annamalainagar  
Dated: 29.5.93

**Dr. PR. Karpagaganapathy  
REGISTRAR**

**ANNAMALAI UNIVERSITY  
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**ENTRANCE EXAMINATION**

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Dated: 29.5.93

**Dr. PR. Karpagaganapathy  
REGISTRAR**